PRR-70-4

NAVAL AIR TECHNICAL TRAINING COMMAND

MANPOWER ALLOCATION AND PRODUCTIVITY MEASUREMENT MODELS

FINAL REPORT

Contract N00022-69-C-0100

Department of the Navy

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FOREWORD

The Final Report for the Naval Air Technical Training Command (CNATECHTRA) Manpower Allocation Model and Productivity Measurement Model is submitted in performance of Contract No. N00022-69-C-0100. The report describes model formulation, assumptions and the data base used to demonstrate model operations. Outputs for models are separately bound. Operational instructions and computer program documentation are provided in a Users Manual.

SUMMARY

The Manpower Allocation Model (MAM) and Productivity Measurement Model (PMM) for CNATECHTRA were developed to provide Navy management with tools for improved manpower planning, programming, and budgeting. Development of the models included an investigation of the available data and an analysis of the processes which take place at the various CNATECHTRA facilities. After the models were formulated, computer programs were written, tested, and run using available data.

The MAM provides the quantitative means of examining manpower requirements for:

1. Memphis, Tennessee: Naval Air Station (NAS), Naval Air Technical Training Center (NATTC), Naval Air Maintenance Training Group (NAMTRAGRU).

2. Glynco, Georgia: Naval Air Station (NAS), Naval Air Technical Training Center (NATTC).

3. Jacksonville, Florida: Naval Air Technical Training Center (NATTC).

4. Lakehurst, New Jersey: Naval Air Technical Training Center (NATTC).

5. Pensacola, Florida: Naval Air Technical Training Unit (NATTU).

for various student training rates (STR).

The MAM was developed using the technique of process analysis to examine the work flow of the CNATECHTRA facilities. Process analysis provides the mathematical structure for the model in terms of labor inputs, intermediate products, and final outputs (trained students). This structure, combined with linear programming techniques, is used to determine the optimum (least-cost) manpower requirements for a particular student training rate. The effects, in terms of manpower and costs, of policy constraints imposed on the number or use of particular labor skill categories can also by analyzed.

The model incorporates the Resource Management System (RMS) Project Prime cost and subcost center identification organization. The model is designed to use data from RMS PRIME, OPNAV 5320, and Summary of Training Operations Reports. Other sources of data can also be used.

For each student training rate, the manpower requirements for each subcost center are specified in terms of the billet identification, the labor skill category. The labor skill category is further defined in terms of labor classification: officer, warrant officer, enlisted men, graded civilian, and ungraded or wage board civilians. The appropriate designator for officers, the rating for enlisted men, and the series for civilian personnel are specified. Where appropriate, based on input data, the NEC/NOBC are identified. The rank, rate, or grade is also listed to indicate the proficiency level of the labor skill.

The model provides the required manhours per month, the equivalent number of people in each labor skill category, and summaries for the cost center. It also determines the required units for each subcost center functioning with the optimum manning.

In addition to this output, other data is available from the linear programming algorithm which can be extremely useful to a manpower requirements analyst. This includes information concerning marginal values, transfer prices, ranges and interrelationships of the inputs, intermediate products, and final outputs at optimality. Because of the lack of realistic constraints (upper and lower bounds) and a range of technologies, however, the solutions provided in demonstrating model operation do not reflect the total model capability.

Based on the structure, inputs and outputs of the CNATECHTRA activities, the PMM was developed to provide conventional productivity measures, productivity indices, and aggregate productivity indices.

The PMM is intended to provide managers with a means of comparing an activity's performance to particular standards. It may also be used to compare the performance of similar and dissimilar activities.

The PMM uses the monthly RMS PRIME 7000-8 and 7000-9 reports as its source of data. Types of data taken from these reports are the work units accomplished, together with labor hours and dollars expended. The standard productivity index may be specified by the user. The PMM computes a cumulative average of productivity indices for each subcost center that may be used as the standard. Other standards, such as engineered standards may be used. The Manpower Allocation Model (MAM) determines the optimal manning and associated optimal work units for each subcost center necessary to support a particular student training rate. This data may be used to form standards for use in the PMM.

Thus, the PMM can be used independently or in conjunction with MAM. Both models utilize the RMS data base structure. By providing the actual ratio of outputs to labor costs and manhours, the PMM can verify the predicted optimal ratio of output to inputs generated by the MAM.

A general framework is also provided for operationally implementing the models in order to satisfy data requirements in the DoD Planning, Programming, and Budgeting System (PPBS).

A users manual containing operational instructions and computer program documentation is available under separate cover.

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OBJECTIVE OF STUDY

> The objective of this study was to provide management with a means (Manpower Allocation Model) for determining the optimal allocation, computation, and justification of manpower requirements for specific activities of CNATECHTRA. The Productivity Measurement Model (PMM) was developed to provide management with the capability to evaluate and compare manpower performance.

The Manpower Allocation Model (MAM) developed under this study is required to determine current and future optimal (least-cost) manpower requirements for the following activities of CNATECHTRA:

1. CNATECHTRA Staff
2. NAS Glynco (including NATTC)
3. NAS Memphis (including NATTC and NAMTRAGRU)
4. NATTC Jacksonville
5. NATTU Pensacola
6. NATTC Lakehurst
7. Naval Air Intelligence School (Lowry AFB)

This model was to estimate manpower requirements to support various training rates of technical personnel. For this study, illustrative rates were assumed, but the model possesses the capability to accommodate any rates.

The structure of the Manpower Allocation Model was designed to implement the RMS PRIME information system. The RMS accounting structure, as modeled, does not always parallel the command structure. Process analysis requires that inputs (labor), intermediate products (goods and services), and final products (trained students), be identified by subfunctional groups. The RMS structure provides detail by subfunction-operation (called subcost centers). Each subcost center uses skilled labor to produce an intermediate product which is consumed by other subfunctional operations in the system.

This study only addressed the optimization of variable labor inputs. These are considered to be those personnel whose required number is contingent upon the level of activities at the station. The efficient use of manpower for throughput activities such as security, public works, etc., is beyond the scope of this present effort.

The model was to be compatible with the Productivity Measurement Model (PMM) for the CNATECHTRA activities. The PMM was developed using the same data base as the MAM. The purpose of the model is to form conventional productivity measures and productivity indices. The objective in applying the models is to use the MAM in order to product optimum manpower and output requirements and to use the PMM in order to verify performance.

The MAM, as developed, may be said to have three specific attributes. The first is a capability to rapidly predict manpower requirements for varying workloads of CNATECHTRA. The second function of the MAM is to provide for management an optimal (least-cost) mix of the above requirements by function, category, grade, and skill level. The third objective is to examine the effect of manpower policy constraints on the manpower allocation and associated costs (sensitivity analysis).

In summary, the objective of this study has been to provide manpower planners and managers with the means to rapidly and comprehensively examine alternate plans, policies, and hypothetical courses of action.

The Manpower Allocation Model reflects the interrelationships of primary and support activities within the CNATECHTRA command structure.

The Chief of Naval Air Technical Training (CNATECHTRA) is responsible for providing the Navy with technically trained specialists for Navy air operations and support. Under the command of CNATECHTRA there exist many component activities. Several Naval Air Stations exist to support the various technical training centers. The technical training centers' primary function is to accomplish the overall CNATECHTRA mission as stated above. Air Stations under CNATECHTRA direction include NAS Memphis and NAS Glynco. Technical Training Centers include those at Memphis, Glynco, Jacksonville, Lakehurst and Pensacola. The Naval Air Maintenance Training Group at Memphis is also under the direction of CNATECHTRA. These relationships are shown schematically in Figure 1-1.

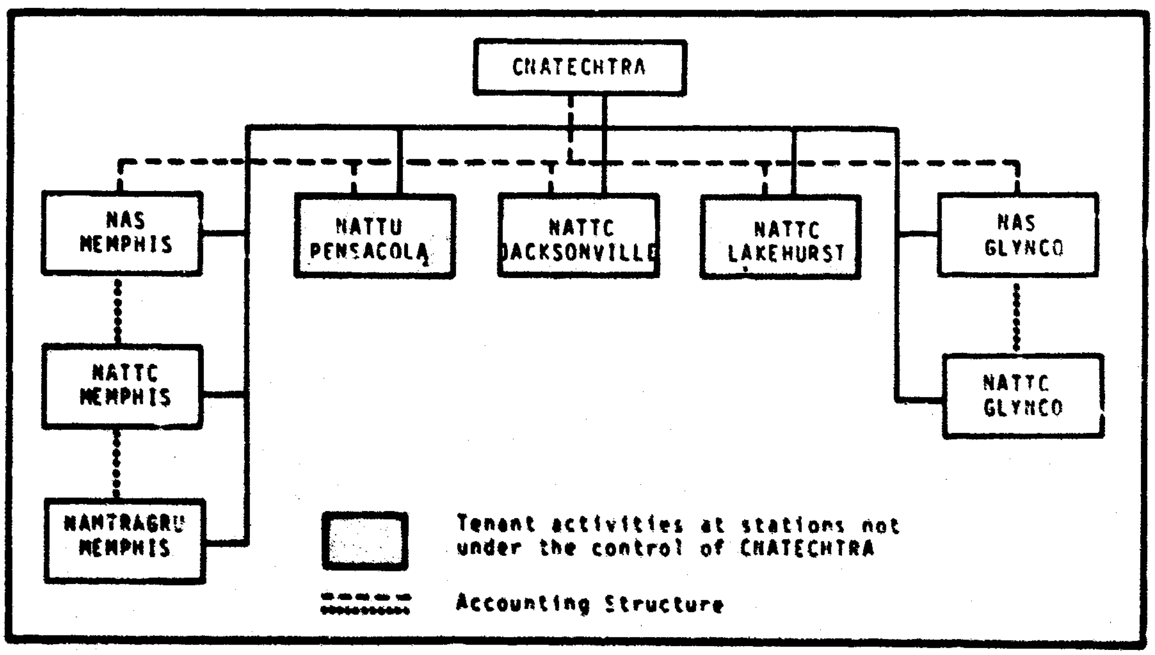

Figure 1-1. CNATECHTRA Command Structure and Accounting Structure as Modeled

The modeling effort for CNATECHTRA can be divided into five major and separate models as illustrated by Figure 1-1. Each model is conceptionally the same with the objective to accomplish some given student training rate at minimum labor cost. However, each model is unique in the aspect of the "processes" involved at the activities to meet a training objective.

The mission of the NATTC at Glynco is to provide trained manpower in particular specialties. To accomplish this objective, the NATTC must rely upon the host NAS for certain goods and services. It can be seen from the process analysis formulation results for the Glynco complex that labor input demand, for both the NAS and the NATTC, is a function of the level of final output (i.e., the training level). As the training level increases, demands for intermediate products at both NATTC and NAS will increase and, hence, the demand for labor at both will increase. The MAM seeks to arrive at a least-cost mix of labor by skill to produce a specified training level.

The mission of the NATTC and NAMTRAGRU at Memphis is to provide the Navy with trained manpower in specific technical categories. Like Glynco, the Memphis complex has a unique internal relationship between host and tenant activities. Both the NATTC and NAMTRAGRU at Memphis must rely on the host NAS for certain goods and services. The NAMTRADETS stationed at other bases receive some support from NAS Memphis and some from the bases where they are tenants. The process analysis uniquely defines the input/output production, and consumption flows, of intermediate and final products at the Memphis activity.

Technical training centers at Jacksonville, Lakehurst, and Pensacola produce trained technical personnel in a variety of specialties. Each are treated as separate model efforts due to the uniquely independent training "processes" occurring at each activity. One important characteristic differentiates these activities from the Memphis and Glynco complexes. Jacksonville, Lakehurst, and Pensacola rely on certain goods and services to be provided by host naval air stations. These air stations do not fall under the CNATECHTRA structure and, hence, were not treated in the modeling effort. It is, therefore, assumed that those goods and services will be furnished in the required amounts. The MAM will, for these three activities, provide a least-cost optimum labor mix to support given student training rates.

No labor data was available for the Naval Air Intelligence School located at Lowry AFB, Colorado and since this is a throughput function this activity was not modelled.

> The approach taken has involved an analysis of the technical personnel training process, setting up a production function, allowing alternate modes of production for goods and services, and then determining the least-cost mix of labor inputs to produce a specified output of technically trained personnel.

Improved source-data collection systems, such as RMS PRIME, have provided a reliable and comprehensive Navy-wide data base. This permits the application of more objective and quantitative techniques in determining and allocating manpower requirements for functions performed ashore.

As a first step of this study, it was necessary to consider a large number of interconnected intermediate products for each type of activity (RMS PRIME subcost centers) in the naval stations studied. A process analysis technique was employed which deals with the interrelationships of these subcost centers, and the identification of alternative processes for operating and organizing them in the context of the overall program objective.

For the training rates examined in this study, a linear relationship was assumed between the variable labor inputs (manpower and untrained personnel), intermediate products (those goods and services which are consumed internally within the organization), and final outputs (trained personnel) for each cost center. The complex system of interrelated cost centers with its intricate flow of goods and services is consequently represented by a large system of linear equations. The result of this analysis is the selection of the "best" processes for securing efficient utilization of resources within imposed constraints.

Programs were developed to describe the process analysis for the naval air stations and provide data in a format suitable for linear programming solution. The objective function was to minimize the total cost of the labor inputs. There were several constraints which could be considered. Not all of these were exercised in generating the manpower requirements presented in this report. First, certain policy constraints on labor may be stated (for example, 20% of labor inputs must be civilian personnel). Second, upper or lower bounds may be put on some labor inputs (for example, a minimum number of some categories (e.g., GM's, QM's, BM's) must be utilized; a specified maximum number of some categories (e.g., ET's, FT's, AC's) may also be specified). Third, all variables must be non-negative, since a negative labor or cost has no economic meaning. Fourth, lower bounds on intermediate products may be specified to account for consumption by fixed labor.

In the overall plan of study for development of the model, process analysis was used to describe the flow of inputs and outputs, as well as the consumption of intermediate products. The RMS PRIME subcost center and cost center structure was the basis for the process analysis. Within this basic structure, the model had to examine all feasible levels of activity solutions and then arrive at an optimal activity level. The solution then had to be translated into manpower requirements.

In order to develop the model for forecasting manpower requirements, it was, therefore necessary to include in the study:

1) The development of linear functional relationships between specific labor technologies and intermediate products with respect to the required pilot training rates.

2) The aggregation and synthesis of these relationships, within the framework of process analysis, to a manpower allocation model that specifies the optimal mix of manpower over time to achieve specified output levels within stated or explicitly assumed policy and environmental constraints.

3) Constraints on basic manpower resources available to CNATECHTRA.

In developing the model, RMS PRIME data has been used to provide the detailed subfunctional organization output measurements. OPNAV 5320 provided the labor description by grade skill level and category. The interrelationship of subcost centers was determined through consultation with experienced CNATECHTRA personnel.

> At different levels of command, different types and amounts of information are required. The PMM produces detailed productivity measures at the lower levels where the detailed RMS PRIME data is gathered. It also synthesizes these measures to provide high level commanders with meaningful overviews.

Regular and timely reports on productivity levels and trends are needed at all levels for effective management, planning, and allocation of the limited resources available. However, the need for, and scarcity of, meaningful productivity measures is especially acute at the high levels of command. The detailed information which is collected by the RMS PRIME system for each cost and subcost center is generally most useful to the lower level commanders. From their detailed knowledge of an individual center's situations, they can almost intuitively judge its productivity. Higher level commanders require that large amounts of detailed information be synthesized to give an overall analysis of the command. Since the timeliness of a report affects its usefulness, the computer program system to implement the PMM is designed to facilitate the application of RMS PRIME data to the model, and to speed productivity reporting.

The PMM for CNATECHTRA forms a variety of productivity measures tailored to the needs of managers at each level of command. From the basic RMS data for individual subcost centers, the PMM forms productivity measures which are then aggregated to successively high levels.

For each subcost center in CNATECHTRA, the productivity measurement model forms two conventional productivity measures: output per manhour and output per labor dollar (see Figure 1-2). The output per dollar is then divided by the standard for the subcost center to form a productivity index.

PRODUCTIVITY MEASURES
FOR COST CENTER 1C00
COMPTROLLER
AT
N.A.S. MEMPHIS

TITLE	RMS PRIME DATA			CONVENTIONAL PRODUCTIVITY MEASURES		STANDARD PRODUCTIVITY		PRODUCTION MEASURE	PRODUCTIVITY INDEX
SUBCOST CENTER	WORK UNITS	MAN HOURS	LABOR COSTS	OUTPUT PER MANHOUR	OUTPUT PER LABOR DOLLAR	PER DOLLAR	TYPE CODE	"VALUE" OF OUTPUT	PRODUCTIVITY COMPARED TO STANDARD
1C10 ADMINISTRATION	[illegible]	[illegible]	77	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]
1C20 INTERNAL REVIEW	1208	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]
1C30 BUDGET AND STATISTICS	0	[illegible]	15	0.0	[illegible]	[illegible]	1	[illegible]	0.0
1C40 ACCOUNTING	[illegible]	4250	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]
1C50 PAYROLL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]
1C70 DISBURSING	[illegible]	10395	347	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]

COST CENTER
AGGREGATE PRODUCTIVITY MEASUREMENTS

	TITLE	TOTAL LABOR COSTS	TOTAL PRODUCTION MEASURE	AGGREGATE PRODUCTIVITY INDEX
1C00	COMPTROLLER	[illegible].42	[illegible]	[illegible]

Figure 1-2. Sample Printout of Cost Center Aggregate Productivity Measurements

Since each subcost center's productivity index (PI) is formed by comparing its actual productivity with its own standard, the PI is normalized. They can then be meaningfully compared both horizontally among similar subcost centers at different bases and vertically among different subcost centers at the same base.

The productivity measures, and the data used to form them, are printed out for each subcost center in a cost center. Then the PMM forms an aggregate productivity index for the cost center. This aggregate productivity index is formed by dividing the total labor cost for the cost center into a measure of the total value of the output of that cost center. This value of output (analogous to a "transfer value" in economist's terminology) is titled Production Measure in the PMM printout. The printed value is derived by multiplying the number of work units produced in each subcost center times the standard cost of these work units (i.e., the inverse of the standard output per labor dollar).

For each command, the PMM reprints the productivity indices of the subordinate cost centers and forms an aggregate productivity index for the command by comparing the sum of the labor costs to the sum of the production measures (see Figure 1-3). Similarly, the PMM forms an overall productivity for CNATECHTRA (see Figure 1-4) and also reprints the productivities of the subordinate commands.

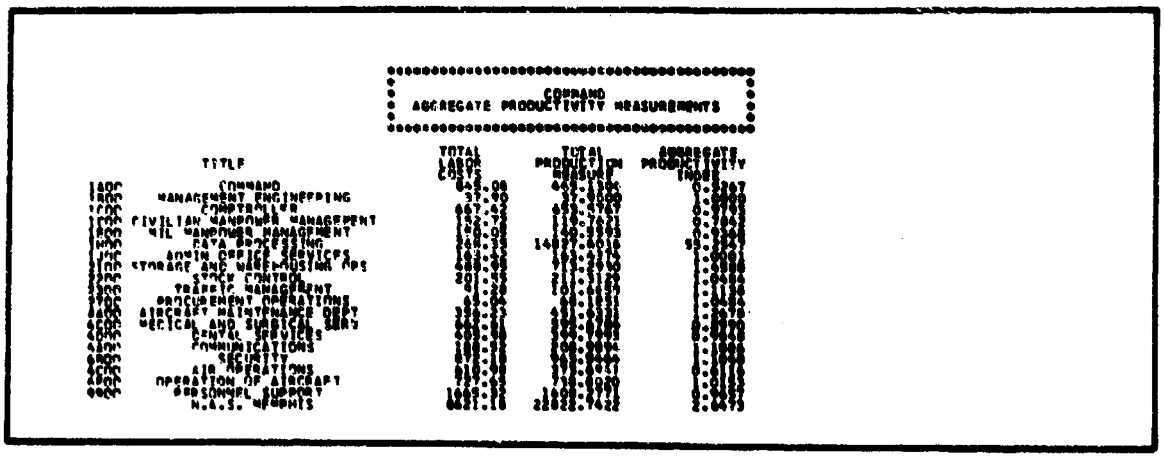

Figure 1-3. Sample Printout of Command Aggregate Productivity Measurements

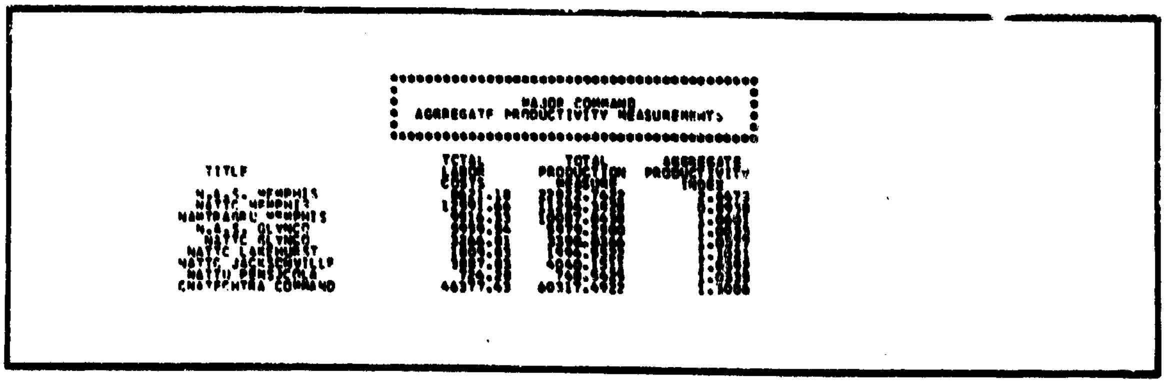

Figure 1-4. Sample Printout of Major Command Aggregate Productivity Measurements

SECTION 2

MANPOWER ALLOCATION MODEL

DESCRIPTION

DATA SOURCES

> A variety of sources were explored and utilized in the development and verification of a valid and substantive data base.

In the development of the Manpower Allocation Model (MAM), consideration has been given to the nature and availability of data. The nature of available data has been important, since it has caused some model modifications. It is important to note that the same richness is not available in all the data.

For an operational model to be useful, the input parameters which characterize system performance must be capable of being measured or estimated. Thus, an operational model such as the MAM should have an empirical basis.

The basic source of data for the development of the Manpower Allocation Model was the RMS PRIME reporting system. Other data sources utilized were: Summary of Training Operations Report, the OPNAV 5320 Manpower Report, up-to-date civilian pay rate schedules, and military labor costs. It should be noted that although the RMS accounting structure provides the type of information necessary for model implementation, other data may be incorporated in the MAM. In certain instances (NAMTRAGRU at Memphis), the basic RMS structure had to be modified for model implementation due to lack of richness in the data sources. In general, the RMS accounting structure is more detailed than the modeling resolution and, hence, aggregation (with some associated difficulties) was necessitated.

The OPNAV 5320 Manpower Report was used to generate the breakdown by skill level and labor category of labor hours expended. This was necessitated since RMS PRIME provides only total civilian and military manhours. Unfortunately, the OPNAV 5320 Manpower Report does not coincide with the RMS structure, so a judgmental allocation of labor was effected. It is noted that the OPNAV 5320 Manpower Report is arranged by organizational function and not the RMS accounting structure. A further deficiency in this data base is that it represents the skill level and labor catetory on board at one point in time (31 December 1968) rather than the average labor mix within any cost center.

Labor inputs, both military and civilian, were costed according to the latest available figures. It should be noted that although historical productivity information is used by the MAM, the selection of the least-cost labor mix is determined on the basis of a single up-to-date schedule of labor costs. This implies that the least-cost mix is determined by current (or future) labor costs and not historical costs.

Data on the production of intermediate products for each cost center was obtained directly from the RMS PRIME reporting system. This data has been aggregated since the RMS accounting structure is on the subcost center basis. Data on the consumption of intermediate products is estimated by applying certain distribution rules to those production figures, since this information is not directly available from RMS. In estimating consumption patterns, consideration was given to both fixed and variable labor inputs.

The Summary of Training Operations Report was used to obtain data on the production of final products (trained personnel). This report, which is published each month, contained the number of students trained (by course) except for the NAMTRAGRU (total of all 23 NAMTRADETS) for which only the total number of students trained was available. This latter shortening in the data base necessitated certain basic model modifications.

Adjustments in the RMS PRIME data were made in cases of a significant scaling difference from month to month, and work units on the same scale as the alternate technology were used.

SUBCOST CENTER	MONTH	REPORTED	ADJUSTED
2131	2	0	3353
	1	0	3121
AA40	4	123465	23465
	1	1532	21532
9921	1	31	9937

Figure 2-1. Sample Adjustments to RMS PRIME Data

The model can be used to measure the impact of such wide fluctuations in productivity. However, in development of the model, data analysis minimized the occurrences.

The Manpower Allocation Model is based on an accounting structure derived from a definitive base of RMS PRIME data.

The structure included in the RMS PRIME data is the basic accounting structure for determining manpower requirements in support of a given student training rate for CNATECHTRA activities. The RMS PRIME data is organized by cost and subcost center (i.e., personnel at a particular air station are grouped into cost and subcost centers as a function of the products and services of the personnel). Personnel providing a particular product or service related to the student training process are assigned the same subcost center. These products and services then become the intermediate products associated with the subcost centers. These subcost centers are then considered as the entities, within an activity, for which manpower requirements must be obtained. This accounting structure is illustrated in Figure 2-2.

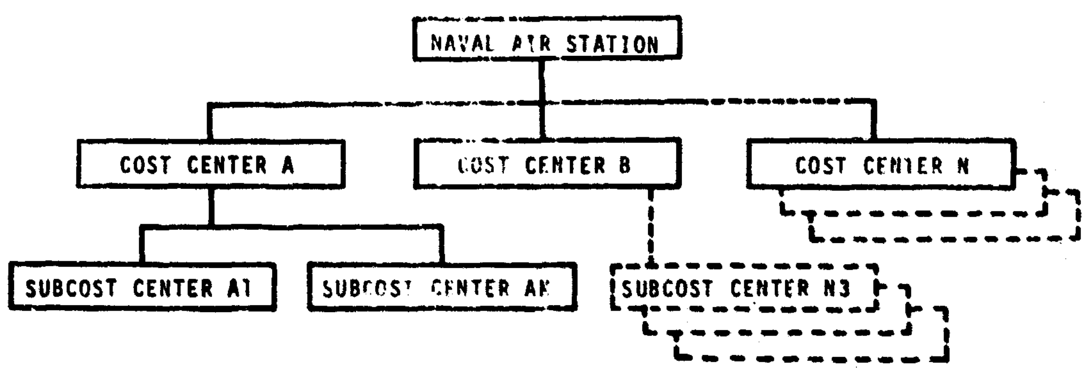

Figure 2-2. - Example of Accounting Structure

The accounting structure in the RMS PRIME data does not consistently parallel the command structure of an air station. The command structure is, of necessity, concerned with a rigid chain of command. A typical command structure is illustrated in Figure 2-3. In the command structure, the air station personnel are assigned to departments where each department has a specific objective, and the orderly flow of goods and services from one department to another is the responsibility of the Command and Executive Offices. As indicated in Figure 2-3, departments may be broken into divisions, which again may be broken into branches, with a chain of command always flowing from top to bottom in the figure. Each department contains, as part of the command structure, a department head or Officer in Command.

In the RMS PRIME data, each department of the command structure is designated as a cost center. However, the subcost center accounting structure does not distinguish, in a "chain of command" sense, between divisions and branches of a department. If a division contains no branches, the division may be designated as a subcost center. If a division is broken into branches, the branches are designated as subcost centers. However, it is possible, in the RMS PRIME data, for more than one branch of a division to be grouped into one subcost center. It is also possible for a branch or a division to be broken up into more than one subcost center.

An accounting structure, as modeled, facilitates a more accurate rendering of work units, specific tasks, and skill level requirements. It permits a cost accountable interrelationship of activities and functions not always apparent or discernable in a command structure. More importantly, it permits the application of objective and quantitative techniques in manpower optimization, yet remains sensitive to policy constraints imposed by manpower planners and managers.

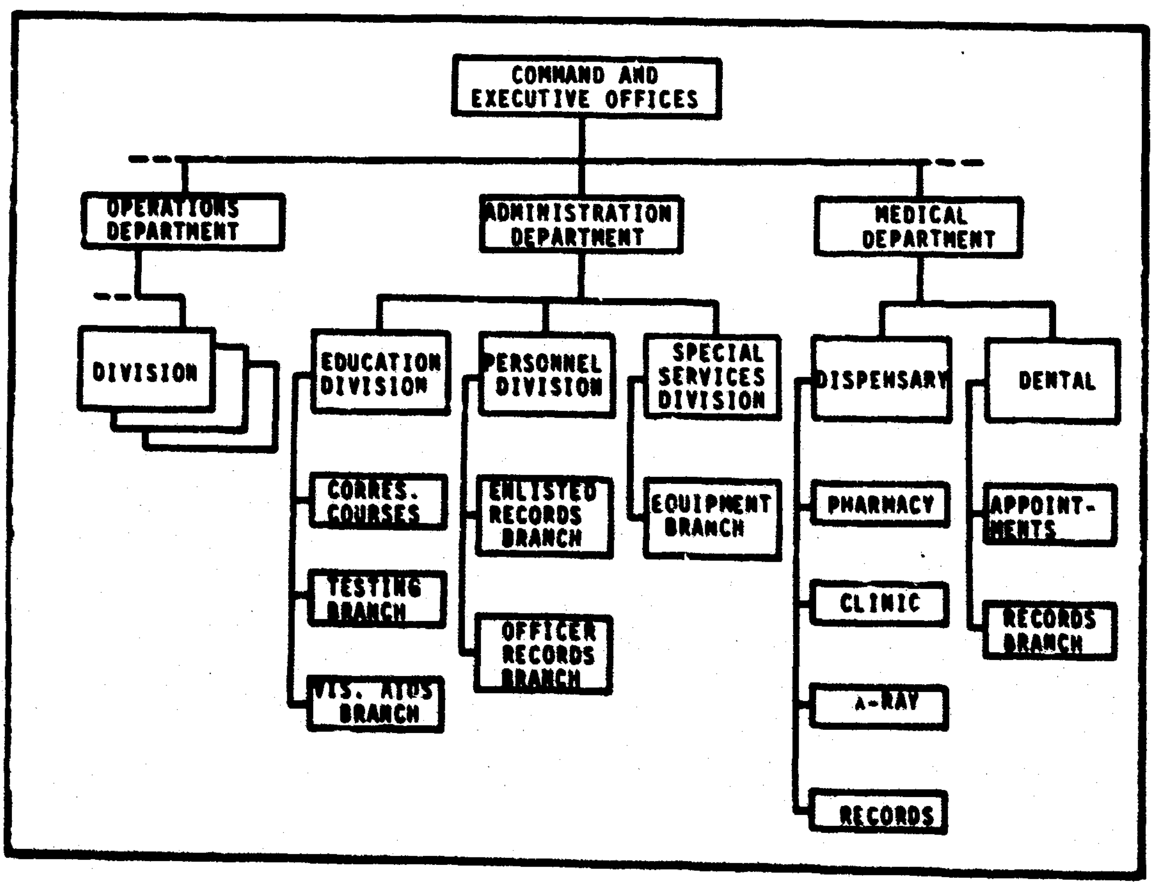

Figure 2-3 Typical Command Structure

STUDENT FLOW

> The Naval Air Technical Training Centers and the Naval Air Maintenace Training Group produce unique technically trained manpower for the Navy.

For all of the activities of CNATECHTRA, planned inputs of students into each type of course are time phased to provide a continuous output of technically trained manpower to meet Navy-wide needs. However, the NAMTRAGRU at Memphis, in addition to providing on-base instruction, conducts training programs at various operational maintenance centers and air stations throughout the Navy shore establishment. The mission of the NAMTRAGRU is to provide maintenance instruction on new types of equipment being introduced for Navy-wide use.

Anticipated student attrition rates for each course are compensated for, and reflected in, the levels of planned inputs to achieve the desired output levels. CNATECHTRA students take only one course of instruction at any one time. Only in rare cases (Aircraft Fundamentals Course, for example) is there internal student flow within the system. Most students enter a course, complete it, and then leave the system entirely.

The NATTC at Jacksonville offers courses in 8 specialties with course length running between 4 and 26 weeks. The NATTC at Lakehurst operates 4 specific types of schools Course duration runs from 7 to 25 weeks. The NATTU at Pensacola offers instruction in 5 areas. Course duration runs from 2.8 to 23 weeks.

NATTC LAKEHURST		NATTU PENSACOLA		NATTC JACKSONVILLE	
Course Name	Duration (Weeks)	Course Name	Duration (Weeks)	Course Name	Duration (Weeks)
AG (A)	17.9	PH (A)	15.4	AE (A)	21.8
AG (B)	25.8	PH (B)	23.4	AO (A)	17.6
PR (A)	15.1	MOPIC (C)	11.6	AEI	23.4
PR (B)	12.8	PHER (C)	14.0	AEV	26.0
AB ([illegible]) Schools	8.0*	PHRECON (O)	2.8	AOB	24.4
AB (C+O) Schools	7.0*			NDIC	8.0
* Average				MARMEC	6.0
				AOMO	4.0

Figure 2-4 CNATECHTRA Courses and Their Duration at Pensacola, Jacksonville, and Lakehurst

The NATTC at Memphis offers 31 unique types of training with course duration running between 2 and 35 weeks.

The NATTC at Glynco offers 21 types of courses running from 1.4 weeks to 18 weeks in length.

NATTC MEMPHIS

Course Name	Duration (Weeks)
AFUN (F)	2.0
AMFU (A)	4.0
AUCC (A)	4.0
ADR (A)	7.7
ADJ (A)	6.9
ADR (B)	13.5
ADJ (B)	12.4
AD (A)	10.9
BASHEL (C)	6.0
AME (A)	6.7
AMS (A)	8.6
AMH (A)	7.8
AME (B)	10.5
AMS (B)	13.9
AMG (B)	12.6
AK (A)	9.6
AZ (A)	7.6
MARAK (C)	9.6
MARAOC (C)	6.0
DAC (C)	6.8
AFU (A)	16.0
AQ (A)	11.0
AT (A)	8.8
AW (A)	15.9
AV (B)	31.4
AVI (B)	31.6
TD (A)	7.8
TD (B)	35.4
AVO (O)	40.0
MAINT (O)	16.0
MAC (O)	6.0

NATTC GLYNCO

Course Name	Duration (Weeks)
CIC (O)	12.8
NTDS	12.7
AEW	7.0
AELW	7.6
RIO	9.8
ATDS	17.2
BJN	4.0
AIC	6.6
ASAC	4.1
AC (A)	12.0
AC (B)	9.3
ATC (O)	9.8
GCA (O)	5.5
CATCC+O	5.6
CPN-4	17.4
FPN36	4.0
GCA ENG.	6.0
GCA/RATTC	3.6
SPN6/12	1.4
SPN10	15.0
MATCU	18.0

NAMTRAGRU MEMPHIS

Course Name	Duration (Weeks)
VARIED	VARIED

Figure 2-5. CNATECHRA Courses and Their Duration at Memphis and Glynco.

DISTRIBUTION OF INTERMEDIATE PRODUCTS

> Intermediate products are distributed to various cost centers on a basis of the interrelationships of the cost centers and associated rules of product consumption.

Intermediate products data was obtained from RMS PRIME. This data base contains only information on the production of intermediate products and nothing about consumption patterns of goods and services. The interrelationship between cost centers was subsequently established through detailed investigation, and a process analysis was developed for each work unit. The only cost centers modeled were those for which work units data was available from RMS, and those for which labor assignments could be made on the basis of OPNAV 5320.

The identification and distribution of intermediate products is the key part of the modeling effort. The end result is a representation of the complex interrelations between all the cost centers. For example, the "output" of the General Mess (food service) is the intermediate product "number of meals served", and is distributed to all other cost centers at the station in proportion to the military personnel assigned to these other cost centers. On the other hand, the "output" of the Airframes subcost center in the Aircraft Maintenance Department is the intermediate product "number of airframes work orders completed", and is distributed to all Cost Centers in proportion to the number of officers holding flight status.

The distribution of every intermediate product was considered for each subcost center. The result of this work is presented in a following Section. Each subcost center is identified by name and RMS PRIME code with work units (output) also being given. The nature of the intermediate product was considered in the determination of distribution rules. Those cost centers whose outputs were determined not to vary with student training rates were not included in the process analysis. These cost centers are referred to as throughput cost centers.

It is clear that throughput cost centers consume goods and services. It was assumed that a negligible amount of intermediate products were consumed by throughputs and, hence, the percentage used for distribution were computed exclusive of throughput labor. Although this assumption is thought to be valid, the consumption of appreciable amounts of an intermediate product by throughputs can be modeled by the inclusion of a lower bound on the right hand side of the linear programming formulated production and consumption. This is, in effect, a statement that at least some number of products must be produced for the throughput cost centers.

ANALYSIS RESULTS

> A process analysis approach was used to model alternate modes of production. It simultaneously considers a large number of interconnected partial production functions for each activity of CNATECHTRA.

Process analysis has the capability of considering alternate modes of production. In a complex organization such as CNATECHTRA, this approach considers a large number of interconnected, partial-production functions to determine a least-cost labor mix. Certain specific tasks are inherent in the development of a process analysis model:

1. Development of an exhaustive list of processes employed.
2. Identification of inputs and outputs for each process.
3. Determination of relationships (linear) between inputs and outputs.

The result of such analysis are discussed in the following sections. This process analysis provides a comprehensive look at the structure of each of the five CNATECHTRA activities modeled.

The form and operation of the models are identical. The principal difference arises in the need to specify precisely the different "processes" and their unique interrelationships at each of the activities modeled. This is the essence of the process analysis approach. That is, the methodology is general, but the specification and interrelationship of inputs, intermediate products, and final outputs for each station is unique to that station.

Details of the analysis are to be found in Section 6, Process Analysis, where results are presented for each of the models developed.

IDENTIFICATION OF INPUTS

Inputs to the bases modeled are of two general types: untrained personnel to be "processed", and labor inputs (military and civilian) of various skill levels and categories.

Labor inputs are classified as variable labor inputs or as "throughputs". A "throughput" is labor input to a cost center whose manning requirement remains at a constant level for the training rates under consideration.

Some examples of throughput areas are:

1. CNATECHTRA Staff at Memphis
2. Naval administration unit at Lowry AFB
3. Supply officers direct staff at all activities
4. Security at all activities
5. Public Works at all activities.

The MAM is designed to only address the problem of optimizing the required variable labor inputs. For purposes of providing a complete manning document for each activity, however, throughputs are printed out along with the optimized variable labor inputs. The specific identifications of variable labor inputs (subscripted x's) are contained in the models and in Section 5 of this document. The primary inputs (untrained personnel) are not "free goods," but are costed like all other labor. Attrition is accounted for by implementing policy attrition rates in the model.

The variable labor inputs by skill level and pay grade could not be obtained directly from RMS data, so the OPNAV 5320 Manpower Report was used. Since the billet groupings of this document did not coincide with the RMS organizational structure, labor inputs had to be "hand allocated" to cost units. This means that the variable labor inputs were distributed to the various cost centers in fixed proportions based on the Manpower Listings provided. These listings were for one point in time only (December 31, 1968) and does not represent the average labor mix within any cost center. Labor was costed according to the latest available figures - DOD Instruction 7220.25 "Standard Rates for Costing Military Personnel Services", 1 August 1968, and for civilians the most up to date pay schedule available was used. Since the publication of the OPNAV 5320 Report the job identification code for some hourly workers (those with the Navy's job identification code EX WS - 95's etc.) has been changed to conform with the federal employees job identification code. These workers were only a very small portion of the variable labor inputs, however.

STUDENT TRAINING RATE CONVERSION FACTORS

Conversion factors fix the final product output ratio from various courses accounting for the mix of student types required and the total output requirements.

For all of CNATECHTRA activities, planned inputs of students into each type of course are time phased to provide a continuous output of technically trained manpower to meet Navy-wide needs. Student expected attrition rates for each course are compensated for and reflected in the levels of planned inputs to achieve the desired output levels. Students take only one course of instruction at any one time. Only in rare cases (Aircraft Fundamentals Course, for example) is there internal student flow in the system. Most students enter a course, complete it, and then leave the system entirely.

The models assume that students are trained at a constant rate throughout the time period of interest. The model could be made dynamic in this sense by the application of seasonal or cyclic variation analyses to account for "peaks and valleys" in training rates and resultant fluctuations in manpower requirements. In addition, the discrete, or "block", nature of the training syllabus could be accommodated in the model by "segmenting" the time period and simultaneously applying different training rates for different segments of the training process.

The range of final product output (FPOR) (i.e., trained students) may be specified for CNATECHTRA courses. The conversion factors shown in Figure 2-6 relate to the total student training process at NATTC Lakehurst. Other system-to-system elements are possible and are explained in the users manual.

COURSE TITLE	NUMBER	COMPUTED CONVERSION FACTOR
AG(A)	0410	0.091
AG(B)	0420	0.020
PR(A)	0510	0.167
PR(B)	0520	0.042
AB(A)	0610	0.211
AB(C+0)	0700	0.469

Figure 2-6. NATTC Lakehurst Conversion Factors

Tenant activities and throughputs were identified and incorporated into the CNATECHTRA models with special relationships and constraints. The nature of the intermediate product was considered in the determination of distribution rules.

Tenant activities are defined as activities receiving support from a naval air station, and throughputs are defined as activities of an air station that do not contribute to the student training process. However, both consume intermediate products of cost centers that are related to the student training process. Manpower requirements for tenant activities and throughputs, and their consumption of intermediate products, are independent of the student training rate, however. The significant difference between tenant activities and throughputs is that throughputs are air station activities that are ordinarily part of the air station structure, while tenant activities are not. An example of a tenant activity is the Naval Weather Service Environmental Detachment located at NAS Memphis, and an example of a throughput activity is Cost Center 6B (Security).

Once the tenant activities and throughputs were identified, they were not included in the model as individual activities. However, their consumption of intermediate products was included in the model as explained below.

The linear program formulation of the Manpower Allocation Model is briefly described in Section 1 of this report. This includes linear relationships and constraints which represent the distribution and consumption of intermediate products among the various cost centers. It is through the use of these constraints that the influence of the tenant activities and throughputs is included in the model.

When the number and type of personnel at the tenant activities and throughputs were determined, the distribution functions for the consumption of intermediate products were used in order to determine the consumption of intermediate products for each activity. Assuming that these activities did not contribute to, or influence, the student training rate, the amount of intermediate products consumed for these activities was then entered into the model as a lower bound for the output and the consumption of the intermediate products for the appropriate cost centers. In this way, each cost center included in the model is required to produce an initial amount of output which is equivalent to the total amount of the output consumed by all of the tenant activities and throughputs. It is at the same time required to produce a minimum amount of output which is the total amount of output consumed by all of the tenant activities and throughputs plus the total amount of output consumed by all other cost centers.

For example, consider in particular the mess hall facilities at NAS Memphis, Subcost Center 9911. The work unit, or intermediate product, for this subcost center is the number of meals served. If it can be determined (for the time period under consideration in the model) that the tenant activities and throughputs consume, say, 4,000 meals, then the output of Subcost Center 9911 must be greater than, or equal to, the number of meals required by all cost centers included in the model, plus the 4,000 meals consumed by the tenant activities and throughputs.

> The problems encountered in the development of the CNATECHTRA models involved the nature and availability of data prepared as input to the model.

Lack of completeness in the data (workunits), and the fitting of other data into the RMS/PRIME cost/subcost center structure, caused several problem areas to develop with respect to the modelling of the flow of intermediate products. For example, in the Public Works sections at NAS Memphis and NAS Glynco, labor was assigned to general RMS/PRIME account numbers, (i.e. no attempt was made to break the labor down into the fine structure that exists in RMS/PRIME). Even through Public Works is, in general, a throughput, the above illustrates a common problem. The form of the available data has necessitated several model changes. For example, the Summary of Training Operations Report, which is published every month, contained the number of students trained by course except for the NAMTRAGRU (total of all 23 namtradets) for which only the total number of students trained was available. The model was modified in this, and other cases, as documented below.

a. NATTC Memphis

1. At NATTC Memphis on the final products report (Summary of Tra.ning Operations). the AV(A) course should read AFU(A). The course name was changed.

2. The AX(A) course was discontinued in July 1968 and, therefore, is not relevant to the data period.

3. Courses INS(C), SAM(C), and PIN(C) were not included as final products. No breakout of labor in the OPNAV 5320 report could be found to correlate to these courses. It must, therefore, be assumed that these courses "share" instructors with other courses, with the precise definition not being made clear in any available data. They are not treated as final products.

4. All other final products are accounted for.

b. NAMTRAGRU Memphis

1. Dummy cost center 5000 was created since final products (students graduated) are reported at the NAMTRAGRU level rather than at NAMTRADET level.

2. A student on-board figure is derived from the RMS data (man months of instruction) and assigned to cost center 5000 for purposes of intermediate product distribution.

c. NATTC Glynco

All courses are accounted for except SPN35(C) and MATCUX(C) for which no corresponding labor in OPNAV 5320 could be found. Again, "shared labor" is assumed for both of these courses. They are not treated as final products but the capability should exist, implicit in manning, that these can be produced as a by-product of the system.

d. NATTC Lakehurst

1. ABE(A), ABF(A), ABH(A) are aggregated together under AB(A) schools classification due to lack of detail in the OPNAV 5320 labor listing.

2. For the same reason, the RADSET(C), ASWEP(C), SATSC, SF&R(C), OLS(C), METS(C), CUA(C&O), CUS(C&O), AUFUEL(C&O), CATD(C), CATL(C), MEM(C), OV-10(C) ALRE REF (C), A001(O) are all under the classification of AB(C&O) schools.

3. Final products and on-board data for these types of situations were obtained by month by summing final products and on-board counts for all respective courses under each general school classification.

e. NATTC Jacksonville

1. To obtain final products and on-board figures for AE1 and AEV(B), the total figure by month was divided by 2 and allocating equal amounts to each course. This was done because only aggregate figures appear on the Summary of Training Operations Report. Due to the similarities and duration of the courses, this is a fair approximation.

2. The same NDI(C) course is the same and identified in our model as the RADIOG(C) course.

f. NATTC Pensacola

1. PH(B) and PHQVALCON(B) are combined due to lack of detail in OPNAV 5320 report.

2. PHES(C) course was not included in the final products output. No evidence of labor to allocate to this course could be found in the OPNAV 5320 report. A similar reasoning was applied here as for NATTC Jacksonville.

3. PHRECON(O) course is the same as the PHER course identification.

APPLICABLE CONSTRAINTS

Certain constraints may be incorporated into the process analysis models to reflect management policy, variable labor inputs, and specified bounds on output.

The process analysis models have been designed to accommodate upper and lower bounds on each variable labor input, policy constraints relating to combinations of variable labor inputs (i.e., only 20 per cent of labor in a cost center may be civilian), and lower bounds on the outputs (number of students trained).

For the application at hand, the only constraint equation used was the lower bounds on outputs. At the time of this application, there were no known bounds on the variable labor inputs specified by CNATECHTRA or the Chief of Naval Personnel.

As the manpower allocation problem is studied more closely in the future, constraints (upper and lower bounds) on each variable labor input may be specified. The model has the capability of accepting such constraints, provided a technology exists which will provide a feasible solution within these constraint statements at the student training rates specified.

One constraint which could be exercised in sensitivity analysis would be to compare the support of the NATTC versus the support for the NAMTRAGRU provided by the NAS. The model input data is configured for evaluating the NAS support to both the NATTC and NAMTRAGRU. By using the constraints on the final products to hold one training function constant, the impact on the NAS (caused by fluctuating training rates by the other training function) can be measured.

STRUCTURE OF MANPOWER ALLOCATION MODEL (MAM)

> MAM is structured to minimize total manpower cost to attain a specified output level. An understanding of the mathematical and logical structure of the MAM will assist the user in operating and modifying the model.

The MAM is structured so that by varying the level of desired output of trained students, and stating pertinent constraints, it is possible to compute the least cost mix of manpower inputs required.

Before further describing the mathematical form of the model, certain notations are defined:

- x_i - ith labor input classified by skill category and level in units of manpower per month
- z_i - ith final output item classified by level of student training achieved in units of number of students per month
- Y_i - ith intermediate product classified by the producing cost center and the consuming cost center in work units per month
- c_i - cost of the ith labor input (x_i) in dollars per manhour
- W - a column vector of activity levels; each cost center is run at some activity level in each technology period
- X - column vector of labor inputs; i.e., $\begin{bmatrix} x_1 \\ \vdots \\ x_n \end{bmatrix}$

  Capital letters are used to represent vectors of quantities (for example, the x_i's and z_i's)
- A - technological matrix whose entries (technological coefficients) are related to partial productivities and reflect the operation doctrine/organization of a cost center.

NOTE: The terms "Pilot Training Rate (PTR)" and "Pilot Training Flow (PTF)" appear throughout this document and may be used interchangeably with "Student Training Rate (STR)" or "Student Training Flow (STF)".

Process analysis is used to describe the flow of inputs and outputs to and from the various cost centers. The rules by which these products have been distributed for NAS and NATTC Glynco, NATTC Lakehurst, NATTU Pensacola, NATTC Jacksonville, and NAS, NATTC, and NAMTRAGRU Memphis are described in the discussion of process analysis. With the structure provided by process analysis, the manpower allocation model is designed to minimize the total cost of the variable labor inputs ($\Sigma c_i x_i$) subject to certain constraints. These constraints are as follows:

1. Outputs $\geq$ specified level
2. Policy constraints on labor utilization
3. Upper and lower bounds on variable labor inputs
4. Non-negativity constraints on variables

In more mathematical terms, the model becomes:

Minimize: $$C^T X \tag{1}$$

Subject to: $$Z \geq K_1, \tag{2}$$

$$AW = \begin{bmatrix} Z \\ Y \\ X \end{bmatrix} \tag{3}$$

$$K_2 \leq X \leq K_3 \tag{4}$$

and $$W, X, Y, Z \geq 0 \tag{5}$$

where:

C and X are column vectors (C^T is the transpose of C)
A is an N x m technological matrix
K_1 is a column vector of required outputs
K_2 and K_3 are lower and upper limits on labor inputs
W is an m x 1 column vector of activity levels of subcost centers
Z is a column vector of n_z outputs
Y is a column vector representing n_y intermediate products
X is a column vector of n_x variable labor inputs

Note that $N = n_z + n_y + n_z$. Here, m is the number of distinct technologies or means of operating and organizing subcost centers.

The model formulation by equations (1) through (5) contain both X and W as unknowns.

The model solution is obtained by a linear program and is expressed in terms of activity levels of the various cost centers as follows:

$$AW = \begin{bmatrix} A^{(1)} \\ A^{(2)} \\ A^{(3)} \end{bmatrix} \qquad W = \begin{bmatrix} Z \\ Y \\ X \end{bmatrix} \tag{6}$$

where $A^{(1)}W = Z$, $A^{(2)}W = Y$, and $A^{(3)}W = X$. The linear program problem becomes: Find values for the elements of W which minimize:

$$C^T A^{(3)} W \tag{7}$$

subject to the following constraints:

$$A^{(1)}W \geq K_1 \tag{8}$$

$$A^{(2)}W \geq 0, \tag{9}$$

$$K_2 \leq A^{(3)}W \leq K_3, \tag{10}$$

and

$$W \geq 0. \tag{11}$$

Equations (7) through (11) express the linear programming problem for the vector W of unknown activity levels. The values of the elements of the optimal activity-level vector, $\hat{W}$, are determined by using the well-known simplex method of linear programming. The optimal manning requirements (except for throughputs or fixed labor inputs) are then calculated by:

$$\hat{X} = A^{(3)}\hat{W}, \tag{12}$$

where $\hat{X}$ is the vector of labor inputs at optimal manning.

The mathematical structure of the model is based on linear relationships between the cost/subcost centers and determining optimal activity level vectors subject to quantified constraints.

The simplex method is based on the fact that, if there are m constraints (or rows) in the constraint matrix, and these are linearly independent, then there is a set of m columns (variables or vectors) which are also linearly independent. Hence, any Right Hand Side (RHS) can be expressed in terms of these m columns (called a basis). The simplex method uses these basic solutions, stepping from one to another (by exchanging one column in the basis with one column not in the basis on each step or iteration) until a solution (called a basic feasible solution) is obtained that satisfies all of the constraints and the requirement that all the column values be non-negative.

After a basic feasible solution is found, the simplex method steps along, examining a series of basic feasible solutions to find one that satisfies the requirement that the value of the functional (or objective) row be a maximum or minimum (the optimal solution). For the MAM, the objective function is in mathematical terms: Minimize $C^T A^{(3)} W$. Not all LP problems have an optimal solution. If there is no solution in non-negative variables, or none that keeps the variables within their specified bounds, the LP problem is said to be <u>infeasible</u>. If a feasible solution is found, but the constraint rows do not confine the value of the functional row to finite values, the LP problem is said to be <u>unbounded</u>.

REFERENCES

a. Mathematical Programming System/360 (360A-CO-14X) Linear and Separable Programming - Users Manual, IBM.

b. Manpower Allocation Model, Volume 1, Final Report, Contract N00022-69-C-0076, Mellonics Systems Development Division, May 1969.

c. Mathematical Programming System/360 (360A-CO-14X) Control Language - Users Manual, IBM.

> The Manpower Allocation Model (MAM) output gives a detailed report of manpower requirements for each subcost center for specified student training rates (STR's).

The output of the MAM is a computer listing of manpower requirements for specified STR's. The output, which contains manpower requirements to support a given STR is organized for each CNATECHTRA command as shown in Figure 2-7.

For each STR, the first page contains the indication of the STR (or Final Product Output Rate (FPOR)) being examined. The FPOR for the system and the elements are listed as shown in Figure 2-7.

```
**************************************************************
* OPT NUM   COST   CENTER   MANPOWER   ALLOCATIONS          *
* ACTIVITY: GLYNCO (60133)                                  *
* SYSTEM ANNUAL FPOR:                    2407               *
*                                                           *
* 2320  ANNUAL  SYSTEM  ELEMENT           115               *
* 233   ANNUAL  SYSTEM  ELEMENT            47               *
* 2410  ANNUAL  SYSTEM  ELEMENT             7               *
* 242   ANNUAL  SYSTEM  ELEMENT            75               *
* 2430  ANNUAL  SYSTEM  ELEMENT           234               *
* 244   ANNUAL  SYSTEM  ELEMENT            40               *
* 2450  ANNUAL  SYSTEM  ELEMENT           197               *
* 251   ANNUAL  SYSTEM  ELEMENT           214               *
* 2520  ANNUAL  SYSTEM  ELEMENT            67               *
* 263   ANNUAL  SYSTEM  ELEMENT           617               *
* 2640  ANNUAL  SYSTEM  ELEMENT            57               *
* 265   ANNUAL  SYSTEM  ELEMENT            97               *
* 2660  ANNUAL  SYSTEM  ELEMENT           362               *
* 2670  ANNUAL  SYSTEM  ELEMENT           169               *
* 2710  ANNUAL  SYSTEM  ELEMENT            47               *
* 2730  ANNUAL  SYSTEM  ELEMENT            15               *
* 2740  ANNUAL  SYSTEM  ELEMENT            17               *
* 2750  ANNUAL  SYSTEM  ELEMENT            12               *
* 2760  ANNUAL  SYSTEM  ELEMENT            27               *
* 2780  ANNUAL  SYSTEM  ELEMENT            15               *
* 2790  ANNUAL  SYSTEM  ELEMENT             7               *
**************************************************************
```

Figure 2-7. Sample Printout of FPOR Header

The MAM printout prescribes manpower requirements for overall CNATECHTRA student training rates for NATTC Glynco, NATTC Lakehurst, NATTU Pensacola, NATTC Jacksonville and NATTC, and NAMTRAGRU Memphis. Other STR's may be defined to make the MAM output relevant to other areas by use of the BUPER program. A sample printout for NAS Glynco is given in Figure 2-8.

The subsequent pages of output contain manpower requirements for each subcost center aggregated at cost center.

OPTIMUM COST CENTER MANPOWER ALLOCATIONS

COST CENTER: 9911 MESSHALLS & GALLEYS

SYSTEM ANNUAL FPOR: 2400
ACTIVITY: GLYNCO (60103)

OPTIMUM WORK UNITS
9911 0

MANPOWER REQUIREMENTS SUMMARY

MILITARY			CIVILIAN			
OFFICER	ENLISTED	TOTAL	GRADED	UNGRADED	TOTAL	GRAND-TOTAL
0	0	0	0	0	0	0

BILLET IDENTIFICATION		LABOR SKILL CATEGORY				MONTHLY MAN-HOURS AND MANPOWER				
SUBCOST CENTER	POSITION TITLE	NEC/ NOBC	SERVICE	SERIES	GRADE	HOURS REQUIRED	LEAVE AND NON-AVAILABLE	GROSS HOURS	MANPOWER CIV	MIL
9911	FOOD SERV OFFR	113^	WO	7982	2	0	168	168	0	1
9911	MESS DECK MAA		E	BT	5	0	168	168	0	1
9911	CIV SUPV		E	CS	8	0	0	0	0	0
9911	VEG PREP RM		E	CS	6	0	0	0	0	0
9911	BUTCHER SHOP		E	CS	[illegible]	0	0	0	0	0
9911	BAKE SHOP		E	CS	4	0	0	0	0	0
9911	MESS DECK MAA		E	EN	5	0	168	168	0	1
9911	GALLEY		E	G	3	0	168	168	0	1
9911	PROV REC		E	SK	6	0	168	168	0	1
9911	CLERK-TYPIST		GS	322	3	0	168	168	1	0
9911	SUPPLY CLERK		GS	2095	3	0	168	168	1	0

Figure 2-8. Sample Printout of Manpower Requirements Summary for a Given Cost Center

Cost Center - Provides the RMS PRIME cost center number and description (e.g., Cost Center A, Command Offices; Cost Center B, Comptroller, etc.). The report is organized by RMS cost center within each CNATECHTRA annual STR.

System Annual FPOR - Lists the annual number of students who should complete training at an activity.

Activity - Provides the name and accounting number of the activity for which manpower requirements are prescribed (e.g., NAS Glynco (60103)).

Optimum Work Units - Provides the standard ("should be") level of output for all subcost centers that produce intermediate products consumed by other cost centers. Subcost centers whose output is consumed within the cost center (e.g., administration) do not appear in this list because they do not enter into the process analysis. These standard output values may be used to check actual performance (i.e., output at an operating STR) in much the same way that a standard cost system is employed for management control purposes. These work units also provide the primary link in the integration between the PMM and MAM.

Manpower Requirements Summary - Indicates the requirements for each cost center by officers and enlisted men with subtotals, graded and ungraded civilians with subtotals, and a grand total of the number of persons needed at the cost center. Manpower requirements for a cost center or an activity may, therefore, be compared at increasing STR's or across activities for similar cost centers at the same STR.

Billet Identification - An input variable which provides the subcost center identification and title for each billet position (e.g., assistant legal officer, public affairs officer, clerk typist). Secondary NEC/NOBC are used if the billet identification was not provided.

Labor Skill Category - Provides, under the "service" column, the general labor classification ("O" for officer, "WO" for warrant officer, "E" for enlisted men, "GS" for graded civilians and "WG", etc., for ungraded or wage board civilians). The column labeled "Series" indicates the appropriate designator for officers, the rating for enlisted men, and the series for civilian personnel. Where appropriate, based on input data, the primary NEC/NOBC also appears to further identify the particular labor skill category for billet assignment purposes. The rank, rate, or grade is also listed to indicate the proficiency level of the labor skill.

Monthly Manhours and Manpower - Provides the total manhours per month and the equivalent number of people in each labor skill category required in the cost center. The "Hours Required" column shows the required productive manhours per month for the skill category and level to support the indicated system STR. The "Leave, Non-Available" column shows the non-productive manhours allowed each month for the skill category and level. There are minimum allowances for each labor type, but the numbers that appear may be greater than the minimum. However, the rounding procedures minimize the amount of this type of time for each series. The "Gross Hours" column shows the sum of "Hours Required" and "Non-Available" columns and represents the leave equivalent/total number of hours required each month. The "Total Manpower" column shows, separately, the total number of civilians and military required by skill category and level.

The last page of the requirements for the STR contains a summary by officer, enlisted and civilian, graded and ungraded. A sample of this printout is shown in Figure 2-9.

```
TOTAL MANPOWER REQUIREMENTS SUMMARY FOR FPOR:   2407

      MILITARY                      CIVILIAN

 OFFICER ENLISTED TOTAL   GRADED UNGRADED TOTAL   GRAND-TOTAL
     7       78     85       82      145    227       312
```

Figure 2-9. Sample Printout of Total Manpower Requirements Summary for a Given FPOR

ADDITIONAL MODEL OUTPUT

> In addition to the principal output of the MAM, a listing by cost center of the least-cost manpower requirements necessary to support a specific output training rate, additional output is available to the manpower requirements analyst.

In addition to the manpower requirements, other information of a more analytic nature is available from the linear programming techniques. This information provides insight into the model structure of labor utilization and constraints and consists partially of the following:

1) values of dual variables;
2) values of slack variables;
3) ranges of student training rates for which labor is linear; and
4) labor cost changes which necessitate process substitution.

The values of the dual variables (also referred to as internal opportunity costs or shadow prices) are available from the linear programming computer output. These variables are numbers which represent the effect (value) of the constraints (right hand sides) on the objective function (least-cost labor mix cost) at the optimum. Mathematically, they are the rates of change of the objective function with respect to the right hand sides of the constraint relations evaluated at optimality. There is a unique dual variable corresponding to each of the constraint relations.

These dual variables have a further important economic interpretation, namely: Those products for whom the corresponding dual variables are equal to zero are free goods, in that some small additional amount of them may be used without increasing the cost of running the base. Otherwise, they represent the unit cost as represented by increasing the total base operating cost of requiring a small additional amount of some product. For example, if there is excess supply over demand for a product, this excess is a free good in that it doesn't involve any additional cost to use it. On the other hand, for a product (either intermediate or final) for which supply just equals demand, it will require operating some cost centers at higher activity levels to make more of this product available. Hence, there is a cost associated with the constraint on the goods. The general principle is that there are positive internal opportunity costs for those products for which the constraints (greater than or equal to) are binding. This is referred to as complementary slackness in mathematical programming.

Associated with each product (final or intermediate) is a slack variable. Corresponding to each product is an equation or inequality. The value of this variable represents the excess of production over consumption, and this quantity is non-negative. Thus, the value of the slack variable represents the amount of "fat" in the system.

It will be positive for free goods and, as discussed above, is intimately connected with the dual variables. Mathematically, a constraint is binding when the associated slack variable is zero.

Items (3) and (4) above are obtained by what is referred to as <u>parametric linear programming</u>. This is not currently part of the linear programming output. To obtain such information, the proper computer commands must be added to the MPS part of the data processing system. This is not envisioned as a major computer programming task.

By use of parametric linear programming (a standard part of the Mathematical Programming System (MPS) of the IBM 360/67 computer), it is possible to determine the ranges of student training rates where labor demands are linear. This may be analyzed for both individual cost centers or an entire facility. This technique may also be used to investigate the impact of labor cost changes on optimal manning requirements. The obvious impact is that if individual costs go up, so will the total cost of running a base. However, it is possible that costs can change in such a way that the manner in which a cost center is organized/operated will have to be changed.

SECTION 3

PRODUCTIVITY MEASUREMENT MODEL

DESCRIPTION

DATA SOURCES AND FLOW

> The Productivity Measurement Model uses monthly RMS PRIME data to form a variety of measures which are aggregated to successively higher levels.

The RMS PRIME data, used as inputs for the Productivity Measurement Model (PMM), is shown in Figure 3-1. For each subcost center and time period covered, the inputs are:

1) number of work units performed or accomplished:
2) number of productive military and civilian labor hours expended;
3) amount of military and civilian labor dollars expended.

This data is directly available from the RMS PRIME 7000-3 reports. The military and civilian labor hours and labor dollars are summed in the program to provide the model with total labor hours and total labor dollars for each subcost center by time period.

Conventional productivity measures which are the unweighted ratio of output (in work units) divided by input (in dollars or manhours) are computed directly from the RMS PRIME data. Since these conventional productivity measures have no normalizing criterion, they generally cannot be meaningfully compared either horizontally, among subcost centers performing similar functions, or vertically, among subcost centers performing dissimilar functions.

The PMM forms a standard productivity measure ($SPM_\$$) by dividing the cumulative total work units produced in the subcost center by cumulative total labor costs (Figure 3-1). This standard (the cumulative average productivity measure in dollars) is automatically updated by the program.

The use of the cumulative average of past productivity measurements as a standard (historical) has the advantage that it smooths out fluctuations in the monthly data. An alternate method of computing a historical standard is to determine a moving average. Still another type of standard is the engineered standard. Data for this type of standard is not available in RMS PRIME reports, but can be obtained from work sampling data, 3M data, or other technical sources.

The productivity model forms a productivity index (PI) for each subcost center by dividing the conventional productivity measure ($CPM_\$$) by the standard ($SPM_\$$). (Figure 3-1). The standard is, thus, a general normalizing criterion. All subcost centers can be compared on the basis of how well they produced in relation to their own standard. The productivity index is then used to calculate the production measure (PM) of the output of the subcost center (Figure 3-1). This is formed by multiplying the labor productivity index by the labor costs, and is a measure of the

value of the output.

By summing the PM's of the subcost centers, the model forms a measure of the total output value of the total productivity measure (TPM) of the cost center. When this is divided by the total labor costs (TLC), the result is an aggregate productivity index for the whole cost center, which is an average of the productivity indices of the subcost centers weighted by their labor costs. By summing the total production measures and labor costs to the station or major command level, similar productivity indices for the entire station or major command are formed (Figure 3-1).

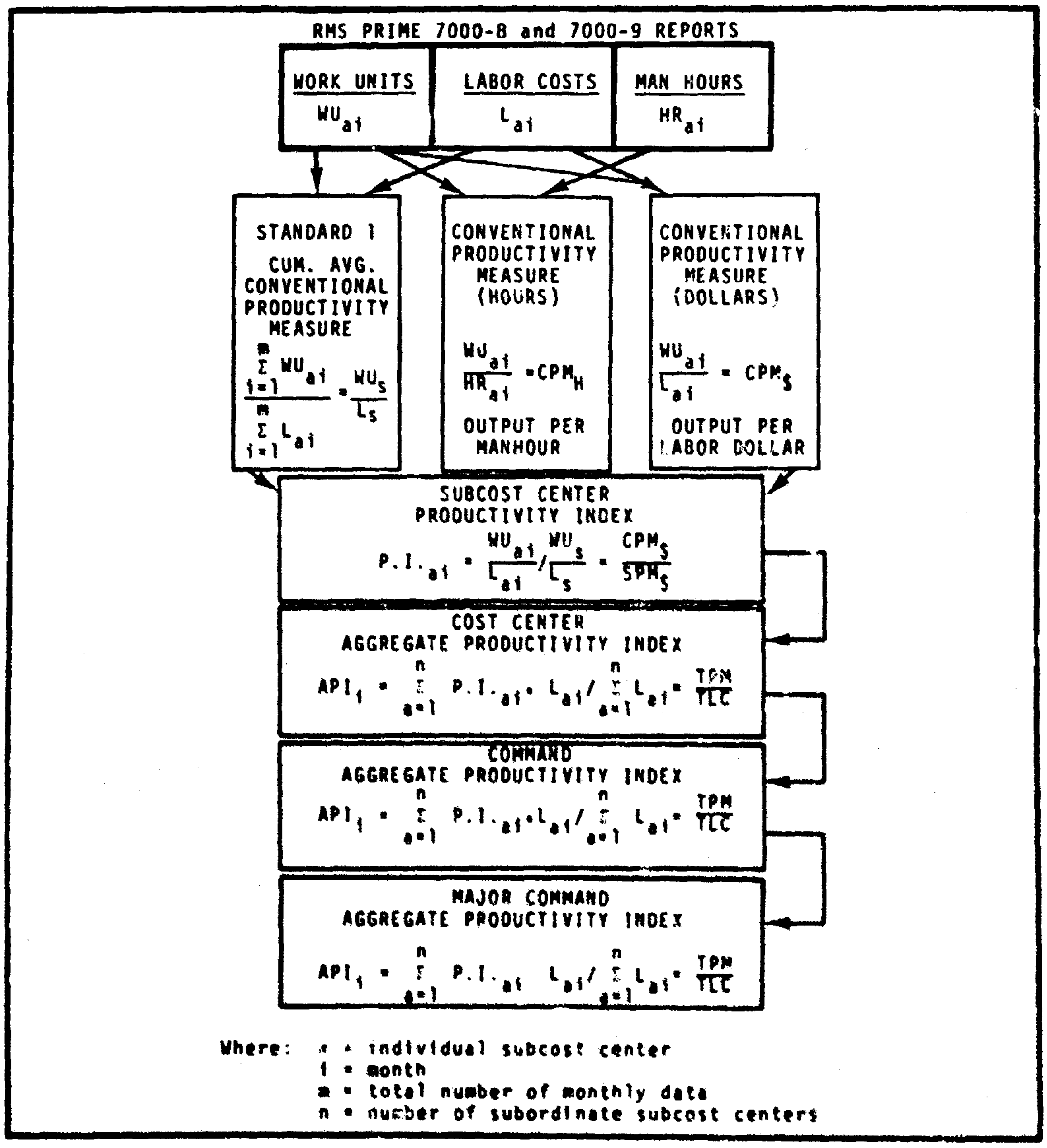

Figure 3-1 Data Sources and Flow in the Productivity Measurement Model

LIMITATIONS AND ASSUMPTIONS

> Productivity measurements cannot be arbitrarily applied. The nature of the data, or of the work done, may significantly change the meaning of the measurements.

Productivity in the most general sense is the relation of outputs to inputs, production to costs, or simply "what was done" to "what it took to do it". The validity of a productivity measure, then, depends on the accuracy of the measurement of outputs and inputs. Since the PMM assumes that RMS PRIME data accurately and meaningfully measures inputs and outputs, the user should be aware of the cases when this is not true. Figure 3-2 presents a summary of the cases which limit or change the applicability of productivity measures.

The first problem, inaccurate reporting of data, is a continuing problem in any information system. The PMM is a helpful tool in limiting these inaccuracies and can be used for data verification. Errors which might not otherwise be noticed often result in obviously questionable productivity measures. The accuracy of the data should always be checked before accepting any productivity measure which is either extremely high or low.

Although most subcost centers actually perform a variety of functions, the mix of outputs is usually constant enough, and the differences small enough, so that the work units are an acceptably accurate measure of the total output. In some cases, this is not true, and the productivity measures then have limited application. A prime example is the public affairs or public information office which counts a telephone call and a formal briefing equally. Where possible, significantly different outputs should be weighted.

In other cases, even though there is only a single item counted for the work unit, the result may be only a very crude approximation of the work done. An example of this is the ground electronics maintenance subcost center whose work unit is cubic feet of electronic gear maintained.

The PMM implicitly assumes that high productivity has a positive value. However, a higher productivity may not be desirable in some cases because of the nature of the function of the subcost center. Subcost centers where quality of output is critical but unquantifiable is a case in point. A course whose work unit is man months of instruction can only have a meaningful productivity measure if the quality of the instruction does not vary. This is not an unrealistic assumption, but it does limit the ability of productivity measures. The essence of an increase in productivity would not be an increase in man months of instruction per labor dollar, but an increase in the amount of learning per man month of instruction, and this cannot be measured.

Continuing high productivity in subcost centers which have the mission of being prepared to handle emergencies is not necessarily desirable. A medical facility with high productivity measures may be understaffed and unprepared for an epidemic or catastrophe. Likewise, a high productivity measure for an aircraft maintenance section may mean that there is a queue of aircraft awaiting repair. In this case, while the maintenance section is highly productive, the base efficiency is reduced because they lack the manpower required to return aircraft to service promptly. High productivity levels may not be desirable for subcost centers whose function and activity level is determined by policy. The personnel services such as the chaplain's office, family service center, and special services fall into this category. The quality of their work is as important, or more important, than the quantity, but since their output is measured in number of persons served, a high productivity may well mean less service to each, or simply that they are understaffed.

A. MEASUREMENT INACCURACIES

1. Inaccurate reporting of data
2. Work units which do not accurately reflect output
    a. Multiple types of output which are not weighted
    b. Single output which does not reflect work required

B. PROBLEMS RELATED TO NATURE OF FUNCTION

1. Quality is crucial but unquantifiable
2. Preparedness for contingencies is important
3. Functions are determined by policy

Figure 3-2. Problems Which Alter or Limit the Use of Productivity Measures

SECTION 4

MANPOWER ALLOCATION MODEL AND PRODUCTIVITY

MEASUREMENT MODEL APPLICATIONS

RELATIONSHIP OF MODELS TO PPBS

> The Manpower Allocation and Productivity Measurement Models are designed to be directly useful in the Planning Programming and Budgeting System (PPBS) of the Department of Defense which requires an exchange of information and data related to manpower requirements and the justification of these requirements.

The PPBS requires extensive formal dialogue relative to Navy manpower and involves several activities within the DoD and Department of the Navy. At any one point in time, these activities may be concerned with manpower requirements for five different fiscal years. For example, work on the FY'72 budget began in February 1969 with the receipt of the update of the Department of Defense five-year defense program (FYDP). As the dialogue continues (Figure 4-1) more constraints are defined in terms of the force level requirements, budget limitations, policies related to the number and mixture of personnel available, and, finally, constraints related to detailing specific individuals to fill the defined manpower requirements. More constraints are defined as the time for implementing the particular budget approaches. In general, there are at least three levels at which they are applicable in the PPBS.

First, the allocation model can be used to generate unconstrained Navy manpower requirements as a function of total planned Navy forces. An example of this use would be as an input from the Office of the Chief of Naval Operations (OpNav) to the Joint Chiefs of Staff (JCS) for the Manpower Annex of the Joint Strategic Objectives Plan, Volume II, Force Tabulations.

Second, the allocation model can be used to generate Navy manpower requirements/allocations as a function force size, such allocations to be generally constrained by total Navy personnel end strength or payroll dollars. Examples of this use would be in OpNav response to OSD Manpower Program Memoranda, JCS Joint Force Memoranda, Navy Program Objectives Memoranda, and to prepare Program Change Requests, Reclamas, and Five-Year Defense Program updates in the annual Planning, Programming and Budgeting cycle.

Third, the allocation model can be used to generate manpower allocations in implementation of program and budget decisions, and as specifically constrained by the inventory of personnel available to the Navy in the short run. The principal users of the models in this mode would be OpNav for manpower authorizations and BuPers for personnel distribution.

Each manpower allocation model developed has used the same basic structure of process analysis and linear programming to evaluate manpower requirements. These are predictive models used to determine the optimum (least cost) mix of labor

(described in terms of service, series, grade, and NEC/NOBC) to produce a required shore activity output. In addition to this basic model formulation, a method for the competitive bidding for labor resources has been developed.[1] This scheme, in effect, "forces" managers to more efficiently use the types of labor which are abundant at a particular time. Finally, when a particular mixture of labor has been assigned to a shore activity, the effectiveness of this labor force can be measured by means of the appropriate productivity measurement model.

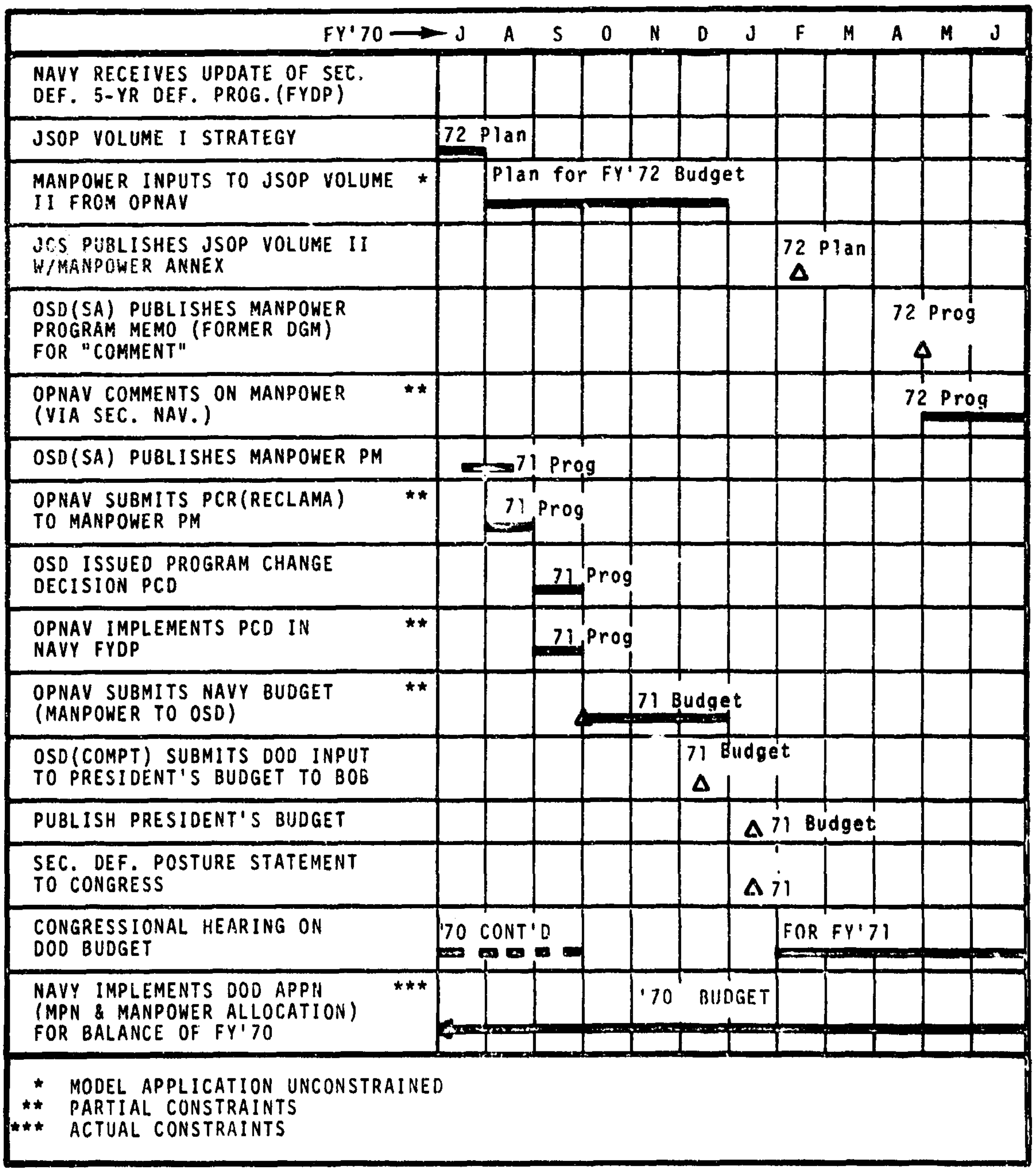

Figure 4-1. PPBS Activities Relating to Manpower in FY'70

1. Manpower Allocation Model, Final Report, Contract N00022-69-C-0076, May 1969

CONTINUOUS MODEL APPLICATIONS IN THE PPBS

> In the continuing process of responding to the PPBS dialogue, the models are not intended to be static tools.

A planned program of model applications is required in order to seek more nearly optimal solutions in response to the PPBS requirements over time. These models are of complex organizations or systems in which many intangibles, such as management capability, morale, environment, etc., bear directly on the performance and capability of the shore activity. Thus, it would be unrealistic to take a "snap shot" of a navy shore establishment and use this data to describe the operation at some later time.

If the models are applied periodically over time in synchronization with the PPBS cycles, the net effect would be two-fold. First, more realistic data can be provided in the PPBS dialogue. Second, the establishment would be "forced" to more nearly optimum use of manpower. The scheme by which this could be accomplished is illustrated in Figure 4-2. Initially, actual historical data is used to form the two technologies. This data is derived from RMS PRIME, OPNAV reports, and related sources. Each level of model application described above (unconstrained, partially constrained, and constrained) results in an optimal least-cost solution. This solution then becomes, in effect, a requirement, or plan, in the PPBS at the appropriate level. In practice for numerous reasons, the plan may not be completely achieved. This fact may be determined from actual data (RMS PRIME, etc.). In subsequent applications of the model, the previous optimum solution can be used to form one technology, and the actual performance data (RMS PRIME) can be used for the second technology. The resulting optimum solution would then reflect, in effect, what is derived and what can be achieved. This successive model application is not unlike the functioning of a missile guidance system. Based on previous data, the guidance system generates a solution (steering command) for impact on the target. Due to errors inherent in the system or a target maneuver, the current solution can be in error. As updated data (scan of the guidance radar, for example) is received, a new solution with new steering commands is provided. This interrelationship between prediction and measured data results in the optimum solution; namely, impact of missile on target.

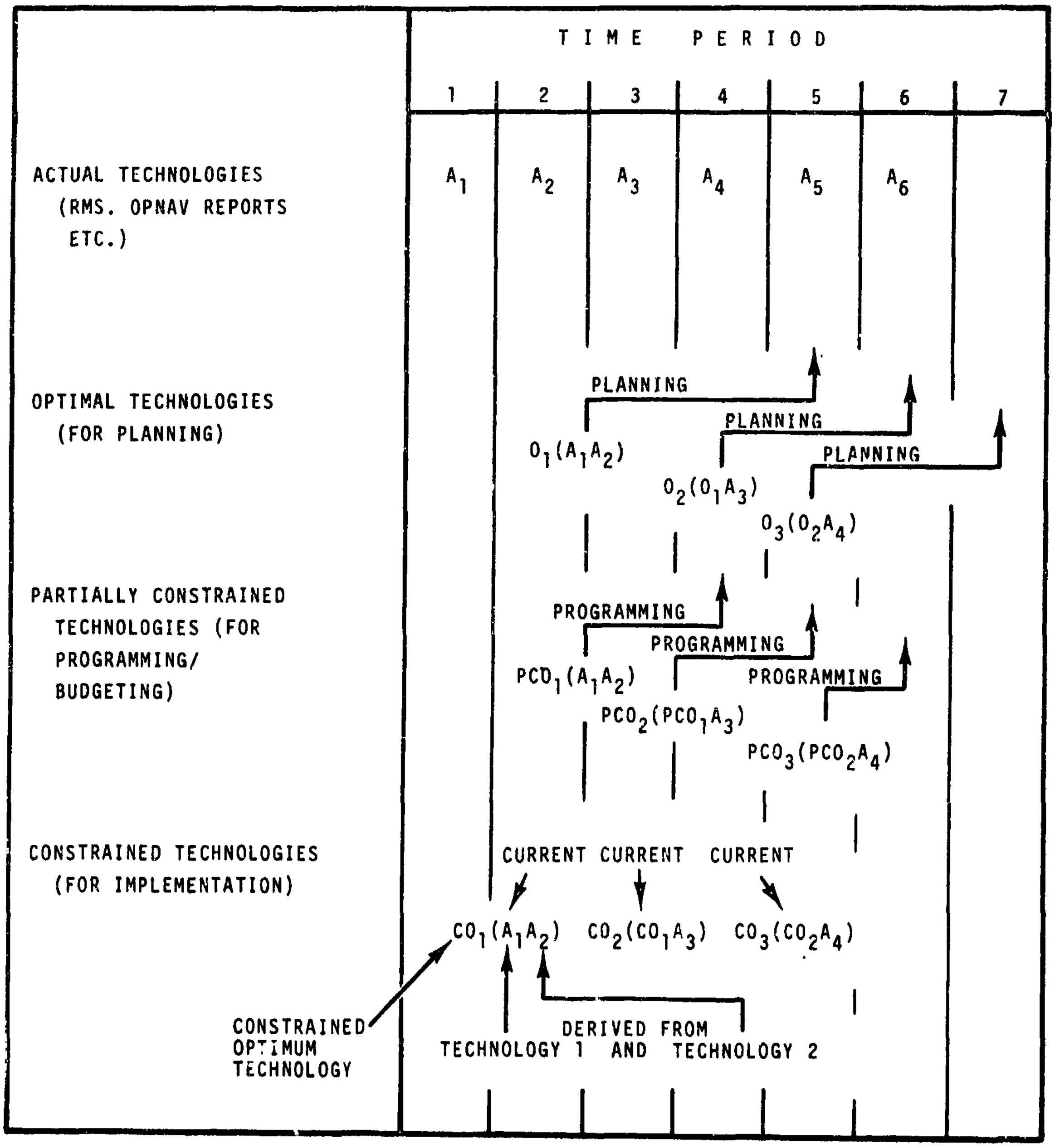

Figure 4-2. Continuous Model Usage in PPBS

> The Manpower Allocation Model (MAM) is used to determine optimum manpower allocation and is used in conjunction with the Productivity Measurement Model (PMM).

A productivity measurement provides a measure of the efficiency of allocating labor resources. A knowledge of the productivity levels and trends is essential for estimating optimum manpower needs and allocations accurately. The Manpower Allocation and Productivity Measurement Models complement each other. The MAM is predictive and the PMM is basically analytical. The MAM tells what the outputs and labor inputs should be at an optimum level of operation. The PMM shows the actual ratio of outputs to labor costs and manhours. The ratio of outputs to inputs at optimality in the allocation model can be used as a standard in the productivity model. The use of this ratio as a standard has several advantages. First, the productivity model can be used to verify the predictions of the allocation model. Second, the standard is more realistic than the average of past productivities, since the allocation model considers shortages and excesses in various labor categories and the resulting need to trade off one type of labor for another.

An example of the possible interaction of the results of the Productivity Measurement Model to the Manpower Allocation Model can be demonstrated by considering data from a single cost center, 2520, ASAC Course, at NATTC Glynco. For this example, the productivity measurements for the two time periods are shown in Figure 4-3. The standard used is the cumulative average over the entire four months period.

PRODUCTIVITY MEASURES
FOR COST CENTER 2520
ASAC COURSE
AT
NATTC GLYNCO

TITLE	PMS PRIME DATA			CONVENTIONAL PRODUCTIVITY MEASURES		STANDARD PRODUCTIVITY		PRODUCTION MEASURE	PRODUCTIVITY INDEX
SUBCOST CENTER	WORK UNITS	MAN HOURS	LABOR COSTS	OUTPUT PER MANHOUR	OUTPUT PER LABOR DOLLAR	PER DOLLAR	TYPE CODE	"VALUE" OF OUTPUT	PRODUCTIVITY COMPARED TO STANDARD
2521 ASAC (LOW PRODUCTIVITY)	35	1421	10573	0.0216	0.0033	0.0033	3	[illegible]	[illegible]
2522 ASAC (HIGH PRODUCTIVITY)	80	1704	11274	0.0469	0.0071	0.0045	3	15147.5946	[illegible]

Figure 4-3. Sample Comparative (High/Low) Productivity Measurements

The effect which a difference in productivity can have on manpower allocation can be seen by comparing the manpower requirements when high productivity is used (Figure 4-4) and when the period of low productivity is used (Figure 4-5).

OPTIMUM COST CENTER MANPOWER ALLOCATIONS
COST CENTER: 2520 ASAC COURSE

SYSTEM ANNUAL FPOR: 3370
ACTIVITY: GLYNCO (60103)

MANPOWER REQUIREMENTS SUMMARY

MILITARY			CIVILIAN			
OFFICER	ENLISTED	TOTAL	GRADED	UNGRADED	TOTAL	GRAND-TOTAL
10	0	10	0	0	0	10

********BILLET IDENTIFICATION*********		****LABOR SKILL CATEGORY****				*****MONTHLY MAN-HOURS AND MANPOWER****				
SUBCOST CENTER	*********POSITION TITLE******	NEC/ NOBC	SERVICE	SERIES	GRADE	HOURS REQUIRED	LEAVE AND NON-AVAILABLE	GROSS HOURS	MANPOWER CIV	MIL
2520	ASAC INSTR	9215	0	1100	3	139	29	168	0	1
2520	ASAC CRS	3290	0	1310	4	139	29	168	0	1
2520	ASAC INSTR/FLT SUPT	8515	0	1310	3	417	87	504	0	3
2520	ASAC INSTR	9215	0	1320	3	556	116	672	0	4
2520	ASAC INSTR	9215	0	6800	3	139	29	168	0	1

Figure 4-4. Sample High Productivity Measurements

OPTIMUM COST CENTER MANPOWER ALLOCATIONS
COST CENTER: 2520 ASAC COURSE

SYSTEM ANNUAL FPOR: 3370
ACTIVITY: GLYNCO (603103)

MANPOWER REQUIREMENTS SUMMARY

MILITARY			CIVILIAN			
OFFICER	ENLISTED	TOTAL	GRADED	UNGRADED	TOTAL	GRAND-TOTAL
18	0	18	0	0	0	18

********BILLET IDENTIFICATION*********		****LABOR SKILL CATEGORY****				*****MONTHLY MAN-HOURS AND MANPOWER****				
SUBCOST CENTER	*********POSITION TITLE******	NEC/ NOBC	SERVICE	SERIES	GRADE	HOURS REQUIRED	LEAVE AND NON-AVAILABLE	GROSS HOURS	MANPOWER CIV	MIL
2520	ASAC INSTR	9215	0	1100	3	297	39	336	0	2
2520	ASAC CRS	3290	0	1310	4	297	39	336	0	2
2520	ASAC INSTR/FLT SUPT	8515	0	1310	3	892	38	930	0	5
2520	ASAC INSTR	9215	0	1320	3	1190	76	1266	0	7
2520	ASAC INSTR	9215	0	6800	3	297	39	336	0	2

Figure 4-5. Sample Low Productivity Measurements

SECTION 5

MODEL INPUTS

LABOR INPUT BY SKILL CATEGORY AND LEVEL

A complete listing of the raw labor inputs forms a basis for the generation of manpower assignments for each specified level of final product output rate. Final products data available for model input is also listed for comparison with desired CNATECHTRA output rates.

The following is a complete listing of labor inputs for each of the CNATECHTRA activities modeled; NATTC Lakehurst, NATTU Pensacola, NATTC Jacksonville, NAS and NATTC Glynco and NAS , NATTC, and NAMTRAGRU Memphis. Each page will contain a specific cost center with the skill levels allocated (officer, warrant officer, enlisted and wage board). Notice that each rank or rating may contain many different categories or designations. The MAM accepts each labor category as a unique input.

Figure 5-1, (four sheets) defines the final products input for the activities modeled.

Figure 5-2, (six sheets) lists the subcost centers at CNATECHTRA activities which were not modeled.

LABOR TECHNOLOGY

1A COMMAND

MEMPHIS

LABOR TYPE AND GRADE				
CAPT	1300,			
CDR	1310,			
LCDR	2500,			
LT	1315,	1105,	2500,	
LTJG	2500,	1105,		
E- 9	BMCM,			
E- 6	MM1,			
E- 5	YN2,			
E- 3	SN,			
GS-12	343,			
GS-11	018,			
GS- 7	343,	344,	312,	083,
GS- 6	318,			
GS- 5	313,	301,		
GS- 4	312,			
GS- 3	322,			

1C COMPTROLLER

MEMPHIS

LABOR TYPE AND GRADE								
LCDR	3700,							
E- 9	DKCM,							
E- 7	DKC,							
E- 6	DK1,							
E- 5	DK2,							
E- 4	DK3,	EM3,						
E- 3	SN,	DKSN,	AN,					
E- 2	SA,							
GS-13	505,							
GS-12	510,							
GS-11	510,	501,						
GS- 9	501,							
GS- 8	525,							
GS- 7	525,	545,						
GS- 6	501,	544,	525,	545,	520,			
GS- 5	312,	544,	520,	525,	545,	540,	2132,	501,
GS- 4	312,	520,	545,	540,				
GS- 3	301,	350,	322,					

1D CIVILIAN MANPOWER MANAGEMENT

MEMPHIS

LABOR TYPE AND GRADE			
GS-13	201,		
GS-12	221,		
GS-11	235,		
GS- 9	212,		
GS- 7	201,		
GS- 6	203,		
GS- 5	203,		
GS- 4	203,	312,	322,
GS- 3	322,		

1H DATA PROCESSING

MEMPHIS

LABOR TYPE AND GRADE				
LT	3100,			
E- 8	DPCS,			
E- 6	DP1,			
E- 5	DP2,			
GS-13	330,			
GS-12	334,			
GS-11	334,			
GS- 9	334,			
GS- 8	322,			
GS- 6	322,			
GS- 5	312,	322,	356,	
GS- 4	301,	359,	356,	
GS- 3	301,	322,	359,	356,

1F MILITARY PERSONNEL

MEMPHIS

LABOR TYPE AND GRADE				
CDR	1310,			
LCDR	1100,			
LT	1100,			
WO- 2	7820,			
E- 9	SPCM,	SDCM,		
E- 8	PNCS,	EMCS,	ANCS,	ENCS,
E- 7	YNC,	ENC,	BTC,	
E- 6	PN1,	YN1,		
E- 5	PN2,	MM2,		
E- 4	PN3,	RM3,	YN3,	
E- 3	SN,			
GS- 9	1710,			
GS- 8	204,			
GS- 7	342,			
GS- 5	1702,	301,		
GS- 4	322,	204,	312,	305,
GS- 3	322,	305,		
GS- 2	302,	305,		

1J ADMINISTRATIVE OFFICE SUPPLIES

MEMPHIS

LABOR TYPE AND GRADE	
GS- 3	350,

21 STORAGE AND WAREHOUSING OPERATIONS

MEMPHIS

LABOR TYPE AND GRADE			
E- 6	SK1,	MM1,	
E- 5	MM2,		
E- 4	SK3,	MM3,	
E- 3	MMFN,	SN,	
GS-11	2001,		
GS- 9	2030,		
GS- 8	2130,		
GS- 7	2005,		
GS- 6	1670,		
GS- 5	2005,	2134,	
GS- 4	2005,	322,	2040,
GS- 3	322,		
WB-10	69054,		
WB- 8	46021,		
WB- 6	69007,	70002,	57054,
WB- 5	69007,	47004,	58006,
WB- 2	35002,		
WS-55	54278,		
WS-54	46021,		
WS-36	69007,		
WS-35	57062,		
WX-45	69065,		

22 STOCK CONTROL

MEMPHIS

LABOR TYPE AND GRADE	
E- 4	SK3,
GS- 5	2020,
GS- 3	2005,

23 TRAFFIC MANAGEMENT

MEMPHIS

LABOR TYPE AND GRADE		
GS- 8	2134,	
GS- 5	2134,	
GS- 4	2134,	540,
GS- 3	322,	
WX-47	46022,	

27 PROCUREMENT OPERATIONS

MEMPHIS

LABOR TYPE AND GRADE	
GS-10	1102,
GS- 7	1102,

AA AIRCRAFT MAINTENANCE DEPARTMENT

MEMPHIS

LABOR TYPE AND GRADE										
CDR	6850,									
LCDR	6850,									
LT	6850,	6852,								
WO- 1	6850,	7410,								
E- 9	AFCM,									
E- 8	ADCS,	AMCS,	ATCS,							
E- 7	ADRC,	ADJC,	ATC,	ASC,						
E- 6	AMH1,	ADJ1,	AMS1,	AE1,	ADR1,	AZ1,	AK1,	AT1,	ASM1,	PR1,
E- 5	AK2,	AMS2,	MR2,	AMH2,	ATN2,	AE2,	ASE2,	ASH2,		
E- 4	AK3,	AMH3,	ATN3,	FTG3,	ATR3,	ASM3,	AZ3,	PR3,		
E- 3	AN,	AZAN,	AKAN,	ATNAN,						
E- 2	AA,									
GS- 4	322,	520,								
GS- 3	322,									
GS- 2	302,									
WB-10	58078,									
WB- 6	69004,									
WB- 5	58078,									

4C MEDICAL AND SURGICAL SERVICES

MEMPHIS

LABOR TYPE AND GRADE		
CAPT	2100,	
LCDR	2100,	2300,
LT	2100,	
LTJG	2300,	
E- 9	HMCM,	
E- 6	HM1,	
E- 5	HM2,	
E- 4	HM3,	
E- 3	HN,	SN,
E- 2	HA,	
GS- 9	660,	
GS- 7	610,	
GS- 5	318,	
GS- 4	312,	
GS- 3	322,	

4D DENTAL SERVICES

MEMPHIS

LABOR TYPE AND GRADE			
CAPT	2200,		
CDR	2200,		
LCDR	2200,		
LT	2200,		
LTJG	2300,		
E- 8	DTCS,		
E- 7	DTC,		
E- 6	DT1,		
E- 5	DT2,		
E- 4	DT3,		
E- 3	DN,		
GS- 4	681,	682,	322,

6A COMMUNICATIONS

MEMPHIS

LABOR TYPE AND GRADE		
LTJG	1105,	
ENS	1105,	
E- 9	RMCM,	
E- 7	RMC,	
E- 6	RM1,	
E- 5	RM2,	
E- 4	RM3,	CYN3,
E- 3	RMSN,	SN,CYNSN,
GS- 7	391,	
GS- 5	301,	382,
GS- 3	382,	

6B SECURITY

MEMPHIS

LABOR TYPE AND GRADE		
CDR	1310,	
LT	1105,	
E- 8	MMCS,	
E- 6	SM1,	BT1,
GS- 4	312,	301,
GS- 3	322,	
GS- 2	322,	

6C AIR OPERATIONS

MEMPHIS

LABOR TYPE AND GRADE								
CDR	1332,							
LCDR	1332,	1310,						
LT	1310,	7610,						
ENS	1341,							
E- 8	ABCS,	ACCS,						
E- 7	ACC,	ADRC,	ATC,	PHC,	GMGC,			
E- 6	AC1,	RD1,	FT1,	EN1,	BT1,	PH1,	GMG1,	
E- 5	RD2,	QM2,	AC2,	ETN2,	ET2,	ETR2,	AK2,	
E- 4	ABH3,	AC3,	ETN3,	ETR3,	PH3.	GMG3,		
E- 3	AN,	ACAN,	RDSN,ETRSN,		SN,ETNSN,	PHAN,		
E- 2	AA,	PHAA,						
GS- 5	2040,							
GS- 4	2040,	1060,						
GS- 3	322,							
GS- 2	322,	302,						
WB-12	26014,							
WB- 5	26014,							
WB- 2	35002,							
WS-42	26014,							

6F OPERATION OF AIRCRAFT

MEMPHIS

LABOR TYPE AND GRADE								
E- 8	ADCS,							
E- 7	ADRC,	AMSC,	ATC,					
E- 6	ADR1,	AMH1,	AMS1,	AME1,	AE1,	AT1,	ADJ1,	
E- 5	ADJ2,	ADR2,	APH2,	AMS2,	AME2,	ATR2,	AE2,	
E- 4	ADJ3,	ADR3,	AMS3,	AME3,	AE3,	ATN3,	ATR3,	AMH3,
E- 3	ADJAN,	AN,AMEAN,	AEAN,					
E- 2	AMEAA,							

9911 MESS HALLS AND GALLEYS

MEMPHIS

LABOR TYPE AND GRADE				
LT	3700,			
E- 9	CSCM,			
E- 7	CSC,			
E- 6	CS1,	SH1,	SK1,	GMG1,
E- 5	CS2,	BT2,	MM2,	
E- 4	BM3,	CS3,	MM3,	
E- 3	SN,	CSSN,		
E- 2	SA,	CSSA,		
GS- 4	501,	312,		

9922 BOQ

MEMPHIS

LABOR TYPE AND GRADE	
E- 7	SDC,
E- 6	SD1,
E- 5	SD2,
E- 4	SD3,
E- 3	TN,
E- 2	TA,
GS- 7	1101,
GS- 5	301,
GS- 3	301,
WG- 1	76006,

9921 BARRACKS

MEMPHIS

LABOR TYPE AND GRADE						
LT	6002,					
WO- 2	7412,					
E- 7	SFC,	BTC,				
E- 6	IC1,	MM1,	SM1,	BT1,	RM1,	
E- 5	MM2,	BM2,	GMG2,	SK2,	SM2,	SFP2,
E- 3	SN,	FN,				
E- 2	SA,	FA,	AA,			
WB- 6	57054,					
WB- 1	35066,					

9931 CHAPLAINS OFFICE

MEMPHIS

LABOR TYPE AND GRADE			
CAPT	4100,		
CDR	4100,		
LCDR	4100,		
LT	4100,		
LTJG	4100,		
E- 6	MM1,		
E- 3	SN,	FN,	AN,
E- 2	AA,	FA,	
GS- 5	312,		
GS- 4	322,		
GS- 3	312,		
WB- 1	35066,		

9932 COMMISSIONED OFFICERS MESS (OPEN)

MEMPHIS

LABOR TYPE AND GRADE	
LTJG	1105,

9934 CHIEF PETTY OFFICERS MESS (OPEN)

MEMPHIS

LABOR TYPE AND GRADE	
E- 9	BMCM,

9937 SPECIAL SERVICES

MEMPHIS

LABOR TYPE AND GRADE							
LCDR	1312,	6702,					
E- 9	SPCM,						
E- 7	ENC,						
E- 6	BT1,	SF1,	MM1,	EN1,	BM1,	EM1,	GMG1,
E- 5	EN2,	MM2,	SH2,	BM2,	EM2,	SM2,	IC2,
E- 4	BT3,	MM3,	EN3,	SH3,	AME3,		
E- 3	SN,						
E- 2	FA,						
E- 1	AR,						
GS- 9	188,	1410,					
GS- 7	1410,						
GS- 4	301,	2040,	525,	322,			
GS- 2	302,	1411,					
WB- 1	35066,						

9939 FAMILY SERVICE CENTER

MEMPHIS

LABOR TYPE AND GRADE	
LT	1100,
E- 7	MMC,
E- 3	SN,
GS- 4	301,

9943 RETAIL CLOTHING STORE

MEMPHIS

LABOR TYPE AND GRADE	
E- 6	SK1,
E- 5	SK2,
E- 4	SK3,
E- 3	SN,

9941 COMMISSARY STORE

MEMPHIS

LABOR TYPE AND GRADE		
E- 6	SK1,	
E- 5	SK2,	AK2,
GS- 6	1670,	
GS- 4	2005,	
WB- 6	69007,	
WB- 5	69007,	

9962 MAINT/RED PERS SU

MEMPHIS

LABOR TYPE AND GRADE		
E- 7	AKC,	
E- 6	AK1,	
E- 5	AK2,	
E- 3	AN,	SN,

5511 COMMAND & STAFF

MEMPHIS

LABOR TYPE AND GRADE	
CAPT	1310,
CDR	1310,
LCDR	9912,
GS- 6	313,

5622 NAMTRADETS QUONSET PT. R.I.

MEMPHIS

LABOR TYPE AND GRADE			
E-	DCC,	AZC,	AKC,
E- 6	AZ1,	AT1,	AMS1,
E- 3	AN,		

5601 NAMTRADETS DAM NECK, VA.

MEMPHIS

LABOR TYPE AND GRADE		
E- 9	ETCM,	
E- 7	ENC,	
E- 6	ET1,	EN1,
E- 5	ETN2,	

5623 NAMTRADETS LAKEHURST, N.J.

MEMPHIS

LABOR TYPE AND GRADE				
E- 9	AVCM,			
E- 7	ADJC,	AMHC,	AEC,	ATC,
E- 6	ADJ1,	AMS1,	AE1,	AT1,

5512 ADMINISTRATIVE DEPARTMENT

MEMPHIS

LABOR TYPE AND GRADE					
LCDR	3100,				
LT	6852,	1325,	1100,		
E- 9	SKCM,	PNCM,			
E- 8	SKCS,				
E- 7	AKC,	YNC,	ADJC,	GMGC,	
E- 6	AK1,	PN1,	JO1,		
E- 5	AK2,	YN2,	PN2,		
E- 4	AK3,	YN3,			
E- 3	AKAN,	AN,	SN,	PNSN,	JOSN,
E- 2	AA,	SA,	FA,	CA,	
GS- 6	501,	204,			
GS- 5	501,				
GS- 3	322,	350,			

5513 TRAINING DEPARTMENT

MEMPHIS

LABOR TYPE AND GRADE										
CDR	1310,									
LCDR	1310,	1315,								
LT	6852,	6702,								
ENS	6271,									
E- 9	AFCM,	AVCM,	ASCM,							
E- 8	AMCS,	AZCS,	AOCS,	AECS,	ATCS,	ADCS,	AOCS,	HMCS,	ASCS,	
E- 7	AZC,	AMSC,	AEC,	ATC,	AMHC,	MYSGT,	AECS,	AMCS,	GSGT,	AQC, ASC,
	DCC,	ADC,	HMC,							
E-	AZ1,	AMH1,	AX1,	AO1,	[illegible]	ET1,	AE1,	ADJ1,	SSGT,	DC1,
E- 5	YN2,	AK2,	AZ2,	EN2,						
E- 4	CPL,									
E- 3	AN,	SN,	DMSN,							
E- 2	SA,	AA,								
E- 1	AR,									
GS-13	1710,									
GS-11	1710,									
GS-10	1710,									
GS- 5	322,									
GS- 4	322,									
GS- 3	322,									
GS- 2	322,									

5515 TRAINING MAINTENANCE DEPARTMENT

MEMPHIS

LABOR TYPE AND GRADE						
LT	6802,					
E- 8	AMCS,					
E- 7	ADJC,	BUC,				
E- 6	MM1,	SK1,	ADR1,	AE1,	AMS1,	SF1,
E- 5	DM2,	MR2,	ATR2,	EM2,	AMS2,	
E- 4	CPL,					
E- 3	SN,					
E- 2	MRFA,					

5624 NAMTRADETS, PATUXENT RIVER, MD.
MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
E- 9	AFCM,
E- 8	ATCS,
E- 7	ADRC, ADVC, AMEC, AEC, AOC, ATC, AXC,
E- 6	ADJ1, AMH1, AMS1, AE1, AO1, AT1, AW1, AX1,
E- 5	AK2, ADJ2, AMH2, AE2,
E- 4	AE3,
E- 3	AN,
E- 2	AA,

5625 NAMTRADETS, OCEANA, VA.
MEMPHIS

LABOR TYPE AND GRADE	
CDR	1315,
LT	6802,
E- 9	AFCM, AVCM,
E- 8	AOCS, AQCS, ADCS, ATCS,
E- 7	ADJC, AMHC, AMSC, AEC, AOC, AQC, ATC, AMEC,
E- 6	AK1, ADJ1, AME1, AMH1, AMS1, AE1, AO1, AQ1, AT1,
E- 5	AK2, YN2, AO2, AOF2,
E- 4	ATR2,
E- 3	AN, SN,
E- 2	AA,

5626 NAMTRADETS, NORFOLK, VA.
MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
LCDR	1310,
E- 9	AVCM,
E- 8	ATCS,
E- 7	AEC, ATC, AOC, AMHC, ADRC, AMSC, DCC, AZC, ASCS, ASC,
E- 6	AK1, YN1, AT1, AO1, AS1, AME1,
E- 5	YN2,
E- 3	AN,

5627 NAMTRADETS, CHERRY PT., N.C.
MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1100,
LTJG	1100,
E- 7	MSGT, GSGT,
E- 6	SSGT,
E- 5	SGT,
E- 4	CPL,

5628 NAMTRADETS, CECIL FIELD, FLA.

MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1355,
LT	6852,
E- 9	AFCM, AVCM,
E- 8	AECS, ATCS, ADCS, AMCS,
E- 7	ADJC, AMEC, AMHC, AEC, AOC, ATC, AMSC, AQC,
E- 6	AK1, ADJ1, AMH1, AE1, AO1, AT1, AME1, AMS1, AQ1,
E- 5	YN2, ATN2, ADJ2, AQB2,
E- 3	AN,
E- 2	AA,

5630 NAMTRADETS. JACKSONVILLE, FLA.

MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1310,
E- 8	AMCS, ADCS, DCCS,
E- 7	AOC, ADJC, ADRC, AMEC, AQC, AZC, HMC,
E- 6	AK1, AO1, AE1, AQ1, AZ1, DC1,
E- 3	AN, SN,
E- 2	AA,

5646 NAMTRADETS, ALBANY, GA.

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
E- 9	AFCM,
E- 8	ADCS, AMCS, AECS, AQCS, ATCS,
E- 7	ADJC, AMHC, AMSC, AMEC, AEC, AQC, ATC, PHC,
E- 6	ADJ1, AMH1, AMS1, AME1, AE1, AO1, AQ1, AT1, PH1,
E- 5	AK2, ATN2,
E- 3	YNSN, AN, SN,
E- 2	AA,

5000 DUMMY COST CENTER

MEMPHIS

LABOR TYPE
AND GRADE

5631 NAMTRADETS, KEY WEST, FLA.

MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1310,
E- 8	ADCS, AMSC, ATCS,
E- 7	AEC, ATC, AWC, ADRC,
E- 6	AK1, ADJ1, AMS1, AE1, AT1, AX1, AW1, ADR1, AMH1, AO1,
E- 5	ADJ2, ATN2, AX2,
E- 3	AN,
E- 2	AA,

5632 NAMTRADETS, PENSACOLA, FLA.

MEMPHIS

LABOR TYPE AND GRADE	
E- 8	AZCS,
E- 7	HMC, DCC, AZC, AKC,
E- 6	AZ1,
E- 2	AA,

5633 NAMTRADETS, MERIDIAN, MISS.

MEMPHIS

LABOR TYPE AND GRADE	
E- 8	AECS,
E- 7	ADJC, AWC, AEC, ATC,
E- 6	AMH1, AMS1,

5634 NAMTRADETS, CHASE FIELD, TEX.

MEMPHIS

LABOR TYPE AND GRADE	
E- 8	AECS,
E- 7	ADJC, AEC,
E- 6	ADJ1, AMH1,
E- 3	AN,

5635 NAMTRADETS, KINGSVILLE, TEX.

MEMPHIS

LABOR TYPE AND GRADE	
E- 8	AECS,
E- 7	ADJC, AEC, ATC,
E- 6	ADJ1, AMH1, AE1, AT1,
E- 5	AK2,
E- 3	AN,
E- 2	AA,

5636 NAMTRADETS, WHIDBEY ISL., WASH.

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1312,
E- 9	[illegible]
E- 8	ADCS, [illegible]
E- 7	AMEC, AEC, AOC, AQC, ATC, ADJC, AMHC, AMSC, ATCS, AZC, AKC,
E- 6	ADJ1, AME1, AMH1, AMS1, AE1, AO1, AQ1, AT1, AK1,
E- 5	AMH2, AQB2, ATR2, ATN2, AE2, AZ2,

5637 NAMTRADETS, MOFFETT FLD., CAL.

MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1310,
E- 9	AVCM,
E- 8	ADCS, AECS, ATCS,
E- 7	ADJC, AMHC, AOC, ATC, AWC, AXC,
E- 6	ADJ1, ADR1, AMH1, AME1, AMS1, AE1, AT1, AX1, AW1,
E- 5	AK2, ATR2,
E- 4	AK3, YN3,
E- 3	AN,

5638 NAMTRADETS, LAMOORE, CAL.

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1300,
LT	1350,
E- 9	AVCM,
E- 9	ADCS, AMCS, AECS, DCCS,
E- 7	ADJC, AMHC, AEC, AOC, ATC, AMSC, AQC, AZC, AKC,
E- 6	YN1, ADJ1, AME1, AMH1, AMS1, AE1, AT1, AO1, AO1, HM1, AZ1,
E- 5	AK2, AQB2, ADJ2, AE2,
E- 3	SN,
E- 2	AA,

5641 NAMTRADETS, MIRAMAR, CAL.

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
LT	6802,
E- 9	AVCM,
E- 8	ADCS, AECS, AQCS, ATCS,
E- 7	ADJC, AMSC, AMEC, AMHC, AEC, AOC, AQC, ATC,
E- 6	ADJ1, AE1, AO1, AQ1, AT1, AMH1,
E- 4	AK3, AO3,
E- 3	SN,
E- 2	AA,

5640 NAMTRADETS, EL TORO, CAL.

MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1100,
LTJG	1100,
E- 7	MSGT, GSGT,
E- 6	SSGT,
E- 5	SGT,
E- 4	CPL,

5645 NAMTRADETS, ALAMEDA, CAL.

MEMPHIS

LABOR TYPE AND GRADE	
E- 8	AOCS,
E- 7	AOC,
E- 6	AO1,
E- 4	AMS3,
E- 3	AN,

5642 NAMTRADETS, N. ISL., CAL.

MEMPHIS

LABOR TYPE AND GRADE	
COR	1310,
LCDR	1310,
LT	6852,
E- 9	AFCM, AVCM,
E- 8	ATCS, ETCS, ADCS, ASCS,
E- 7	ETC, ENC, ADJC, ADRC, AMHC, AEC, ATC, AMSC, AOC, AXC, HMC, DCC, AZC, ASC,
E- 6	YN1, ET1, EN1, ADJ1, AMH1, AME1, AMS1, AE1, AT1, ADR1, AO1, AW1, AX1, AZ1, AK1, AS1,
E- 5	AK2, AE2, ATR2, AW2, ASM2, SGT,
E- 4	AK3, ATR3,
E- 3	AN,
E- 2	AA,

5643 NAMTRADETS, IMP. BEACH, CAL.

MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1310,
E- 9	AFCM,
E- 8	ADCS,
E- 7	ADJC, AMSC, AEC, ATC, AWC, AXC, AMHC,
E- 6	ADJ1, AMH1, AE1, AT1, AW1, AX1, AME1,
E- 5	AK2,
E- 3	AN,

7000 COMMAND & EXECUTIVE OFFICE

MEMPHIS

LABOR TYPE AND GRADE	
CAPT	1310,
CDR	1310, 2500,
LT	2505, 1105, 6802,
E- 9	EMCM, AFCM,
E- 7	YNC, EMC,
E- 6	YN1, BT1, SD1, ADR1, SM1,
E- 5	BM2, MM2, EN2, TD2, PN2, JO2,
E- 4	ADR3,
E- 3	JOSN, AN,
E- 2	AA, SA,
GS- 7	312, 083,
GS- 6	318,
GS- 5	312,
GS- 4	322,

7110 ADMINISTRATION DEPARTMENT

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310, 1385,
LCDR	6800, 1100, 1310,
LT	6202, 1320, 1100, 6852, 3100,
LTJG	1105,
ENS	3700,
WO- 4	7611, 6852,
E- 9	BMCM, PNCM, MMCM, AVCM, AFCM,
E- 8	ADCS, PNCS,
E- 7	ADRC, ENC, AMHC, YNC, PNC, AKC, ATC, AMSC [illegible]DC, TMC,
E- 6	YN1, TM1, PN1, AK1, BM1, BT1, DM1, SSGT, [illegible]D1, IC1, MR1,
E- 5	SN2, YN2, PN2, TD2, IC2, DC2, SFM2, MR2,
E- 4	PN3, YN3, AK3, CPL, TD3, MR3,
E- 3	AN, SN, DMSN, PNSN, AKAN, LCPL, ICFN,
E- 2	AA, PNSA, SA, FA,
GS-13	1710,
GS-11	343, 1710,
GS- 9	341, 560, 1710, 1712,
GS- 8	1020,
GS- 7	204, 560, 1020,
GS- 6	1020,
GS- 5	344, 2040, 312, 1020,
GS- 4	312, 305, 322, 204, 501, 520, 2040, 1020, 301,
GS- 3	322, 204,
GS- 2	322,
WB- 5	69007,
WB- 2	35002,
WP-3[illegible]	44017,
WP- 9	44017,
WP- 6	44016,

7410 MOC OVERHEAD

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
LCDR	6852,
LT	7412, 1100, 6852, 6802,
LTJG	1100,
WO- 2	7412, 7662, 7602,
E- 9	BMCM,
E- 8	MSGT, BTCS, ADCS, AMCS, MMCS, BMCS,
E- 7	PNC, ADJC, AZC, GYSGT, GSGT, ASC, MMC, SMC, SFC, BMC,
E- 6	AE1, SF1, ADR1, AME1, AMS1, AMH1, AK1, SSGT, SM1, MM1, BT1, EN1, ML1,
E- 5	MM2, SGT, ADJ2, ADR2, AMS2, YN2, AM2, BT2,
E- 4	CPL, ADR3, ADJ3, AE3, ASE3, ASM3, TM3,
E- 3	LCPL, AN, SN, ADRAN, EMFN, AMSAN, ASEAN,
E- 2	AA,
GS-1[illegible]	1710,
GS-10	1710,
GS- 4	322,
GS- 3	322,
WB- 2	35002,

7430 AFUN (P) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
LCDR	6850,
LTJG	1100,
E- 9	AFCM,
E- 8	MSGT, AMCS,
E- 7	ADRC, ADJC, GSGT, ABFC, AOC, ABEC, AMSC,
E- 6	SSGT, ADR1, ADJ1, AMH1, AMS1, ABH1, AME1, AJ1, PR1, AM1,
E- 5	ADJ2, ADR2, AMH2, AME2, ABF2, ABE2, SGT, TM2,
E- 4	CPL,
E- 3	AN, LCPL,
E- 2	AA, PFC, SA,
GS- 4	322,
GS- 3	322,

7440 AMEH (A) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1315,
LT	1100,
LTJG	6852,
E- 9	AFCM,
E- 8	MSGT, AMCS,
E- 7	GSGT, ADJC, ADRC, AMHC, AMSC, AMEC,
E- 6	ADJ1, ADR1, AMH1, AMS1, AME1, AM1, SSGT,
E- 5	AMS2, AMH2, ADJ2, ADR2, SGT,
E- 4	CPL, AMS3,
E- 3	SN, AN, LCPL,
E- 2	SA, AA,
GS-10	1710,
GS- 4	322,
GS- 3	322,
GS- 2	322,

7450 AVCC (C) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
ENS	1100,
E- 8	MSGT,
E- 7	GSGT,
E- 6	SSGT,
E- 5	SGT,
E- 3	LCPL,

7461 AD OVERHEAD

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1352,
E- 9	AFCM,
E- 8	MSGT, ADCS,
E- 7	ADJC, ASC,
E- 6	AK1, ADJ1, SSGT,
E- 5	ADR2,
E- 4	CPL,
E- 3	AKAN, AN, LCPL, SN,
E- 2	AA,
GS-11	1710,
GS- 9	1710,
GS- 5	2001,
GS- 4	322,
GS- 3	2040, 322,
WB- 2	35002,

7462 ADR (A) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1313,
WO- 2	7412,
E- 8	AFCM,
E- 9	ADCS, MSGT,
E- 7	ADRC, AOC, SMC, GSGT,
E- 6	ADR1, AT1, SSGT,
E- 5	ADR2, BT2, SGT,
E- 3	AN, LCPL,

7463 ADJ (A) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
LTJG	1100,
WO- 3	6852,
E- 9	AFCM,
E- 8	ADCS, MSGT,
E- 7	ADJC, ADRC, GSGT,
E- 6	ADJ1, SSGT,
E- 5	ADJ2, SGT,
E- 4	CPL,
E- 3	AN, LCPL,
E- 2	AA, PFC,
E- 1	AR,
WB- 2	35002,

7467 BASHELI(C) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
LTJG	1100,
E- 8	MSGT,
E- 7	ADJC, GSGT,
E- 6	SSGT,
E- 5	SGT,
E- 4	CPL,
E- 3	AN, LCPL,

7471 AM OVERHEAD

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
E- 8	AMCS, MSGT,
E- 7	AMSC, AMEC, AMHC,
E- 6	AMS1, AK1, AMH1,
E- 5	AMH2,
E- 4	AK3,
E- 3	AN,AMEAN,
GS-11	1710,
GS- 9	1710,
GS- 5	2001,
GS- 4	322,
GS- 3	322,
WB- 2	35002,

7472 AME (A) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
WO- 4	6852,
E- 9	AFCM,
E- 7	AMEC,
E- 6	AME1, SSGT,
E- 5	AME2, MP2, SGT,
E- 4	AME3,
E- 3	AMSAN, AN, LCPL,
E- 2	AA,

7473 AMS (A) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
LCDR	1312,
LT	1100,
E- 8	AMCS, MSGT,
E- 7	AMSC, GSGT,
E- 6	AMS1, SSGT,
E- 5	AMS2, SGT,
E- 4	AMS3,
E- 3	AN,AMSAN, LCPL,
E- 2	AMSAA,

7474 AMH (S) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
LTJG	1100,
E- 9	AFCM,
E- 8	AMCS,
E- 7	GSGT, AMHC,
E- 6	SSGT, AMH1,
E- 5	SGT, AMH2,
E- 4	CPL,
E- 3	LCPL,
E- 2	AA,AMHAA,

7475 AME (B) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
WO- 3	7410,
E- 9	AFCM,
E- 8	AMCS,
E- 7	AMEC, GSGT,
E- 6	AME1, SSGT,
E- 2	SA, AA,

7476 AMS (B) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
LT	6852,
E- 9	AFCM,
E- 8	AMCS,
E- 7	AMSC, GSGT,
E- 6	AMS1, SSGT,
E- 5	AMS2,
E- 4	AMS3,
E- 3	AMSAN, AN, LCPL,
E- 2	AA,

7477 AMH (B) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
WO- 4	1355,
E- 9	AFCM,
E- 7	AMHC, GSGT,
E- 6	AMH1, SSGT,
E- 5	BT2,
E- 3	AN, LCPL,

7481 AK OVERHEAD

MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
LCDR	7982,
LT	1100,
E- 9	MSGT,
E- 7	AZC, AKC, GSGT, MMC,
E- 6	SSGT,
E- 5	TM2,
E- 3	AN, LCPL,
E- 2	AA,
GS-10	1710,
GS- 4	322,
GS- 3	322,
WB- 2	35002,

7482 AK(A) COURSE

MEMPHIS

LABOR TYPE AND GRADE	
LT	7982,
E- 7	AKC,
E- 6	AK1,
E- 3	AN,

7483 AZ(A) COURSE
MEMPHIS

LABOR TYPE AND GRADE	
LT	6302,
E- 7	AZC, GSGT,
E- 6	AZ1, SSGT,
E- 5	SGT,
E- 3	AN, LCPL,

7484 MARAK (C) COURSE
MEMPHIS

LABOR TYPE AND GRADE	
E- 8	MSGT,
E- 7	GSGT,
E- 6	SSGT,
E- 5	SGT,
E- 3	LCPL,

7485 MARAGC(C) COURSE
MEMPHIS

LABOR TYPE AND GRADE	
LTJG	1100,
E- 7	GSGT,
E- 6	SSGT,
E- 5	SGT,
E- 3	LCPL,

7486 DAC (C) COURSE
MEMPHIS

LABOR TYPE AND GRADE	
LT	6852,
E- 8	AZCS,
E- 7	AZC, AMSC, GSGT,
E- 6	AZ1, AMH1, [illegible]T,
E- 3	AN,

7510 AVIONICS OVERHEAD
MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
LCDR	1100, 6850,
LT	6802, 1325, 6852,
LTJG	7612,
WO- 4	6802,
E- 9	AVCM, MGSGT, BMCM,
E- 8	ATCS, AQCS, TDCS, MMCS, BMCS,
E- 7	ATC, AQC, AXC, GSGT, MMC, ENC, SFC, SMC, BMC, BTC, QMC,
E- 6	TD1, AT1, AX1, AK1, MM1, SM1, BT1, SF1, EN1, BR1, PM1, BM1,
E- 5	ATN2, TD2, EM2, MM2,
E- 4	SM3,
E- 3	AN, EMFN, SN,
E- 2	PFC, SA, AA,
GS-12	1710,
GS-11	1710,
GS- 5	1087,
GS- 4	312, 322, 2040,
GS- 3	322,
WB-13	26002,
WB- 2	35002,

7520 AFU (A) COURSE
MEMPHIS

LABOR TYPE AND GRADE	
CDR	1310,
LT	1320,
LTJG	1100,
WO- 4	6802,
WO- 3	7611, 7612,
E- 9	TDCM, AVCM,
E- 8	QMCS, TDCS, ATCS, AQCS,
E- 7	ATC, AXC, AQC, TDC, MMC, GSGT,
E- 6	AT1, AQ1, TD1, AX1, SSGT,
E- 5	ATR2, ATN2, AQF2, AX2, TD2, BT2, SGT,
E- 3	AN, LCPL, SN,
E- 2	AA, SA,
GS-12	1710,
GS-10	1710,
GS- 9	1710,
GS- 5	2001,
GS- 4	322,
GS- 3	322,
WB-12	26014,
WB- 2	35002,

7530 AQ(A) COURSE
MEMPHIS

LABOR TYPE AND GRADE				
CDR	1310,			
LT	6802,			
ENS	1100,			
WO- 2	7610,			
E- 9	AVCM,			
E- 8	AQCS,	MSGT,		
E- 7	EMC,	AQC,	GSGT,	
E- 6	TD1,	AQ1,	SSGT,	
E- 5	AK2,	AQB2,	SGT,	AQF2,
E- 4	AQF3,	CPL,		
E- 3	AQFAN,	LCPL,	AQBAN,	
E- 2	AA,			
GS-11	1710,			
GS- 4	322,			
GS- 3	322,	2040,		
WB-12	26014,			
WB- 2	35002,			
WS--2	26014,			

7542 AT(A) COURSE
MEMPHIS

LABOR TYPE AND GRADE					
CDR	1310,				
LT	6802,				
WO- 3	6202,				
E- 9	AVCM,				
E- 8	ATCS,	MSGT,			
E- 7	AWC,	ATC,	GSGT,		
E- 6	AT1,	AX1,	SSGT,		
E- 5	ATN2,	SM2,	ATP2,	SGT,	
E- 4	CPL,	ATN3,			
E- 3	AN,	LCPL,			
E- 2	AA,				
GS-11	1710,				
GS- 9	1710,				
GS- 5	2001,				
GS- 4	322,				
GS- 3	322,				
WB-12	26014,				
WB- 2	35002,				

7543 AW(A) COURSE
MEMPHIS

LABOR TYPE AND GRADE		
WO- 4	7610,	
E- 8	AWCS,	
E- 7	AWC,	AXC,
E- 6	AW1,	AX1,
E- 5	AW2,	AX2,

7552 AV(B) COURSE
MEMPHIS

LABOR TYPE AND GRADE			
CDR	1310,		
LT	6802,		
E- 9	AVCM,		
E- 7	EMC,	ATC,	
E- 6	AT1,	AQ1,	AX1,
E- 5	ATN2,	AQB2,	
E- 4	ATN3,	TM3,	
E- 3	ATRAN,	AN,	
E- 2	AA,	PFC,	
GS-11	1710,		
GS- 4	322,		
GS- 3	2040,	322,	
GS- 1	302,		
WB- 2	35002,		

7464 ADR (B) COURSE
MEMPHIS

LABOR TYPE AND GRADE		
LCDR	1313,	
WO- 3	7410,	
E- 9	AFCM,	
E- 7	ADRC,	ADJC,
E- 6	ADR1,	
E- 5	ADR2,	
E- 4	ASM3,	
E- 3	AN,	ADRAN,
E- 2	AA,	

7465 ADJ (A) COURSE
MEMPHIS

LABOR TYPE AND GRADE		
WO- 4	6852,	
E- 8	ADCS,	
E- 7	ADJC,	GSGT,
E- 6	ADJ1,	SSGT,
E- 3	AN,	

7466 ADR (B) COURSE
MEMPHIS

LABOR TYPE AND GRADE				
LCDR	1350,			
LTJG	1100,			
E- 8	ASCS,	MSGT,		
E- 7	ASC,	AEC,	GSGT,	
E- 6	ASI,	ASM1,	SSGT,	
E- 5	ASM2,	AK2,	ASE2,	SGT,
E- 4	CPL,			
E- 3	LCPL,			
E- 2	ASEAA,	AA,		
GS-10	1710,			

7553 AVI (B) COURSE
MEMPHIS

LABOR TYPE AND GRADE					
LCDR	7612,				
LTJG	1100,				
ENS	1100,				
WO- 4	7510,				
E- 9	AVCM,				
E- 8	ATCS,	AQCS,			
E- 7	TDC,	ATC,	AQC,	AXC,	GSGT,
E- 6	AT1,	AQ1,	AX1,	TD1,	SSGT,
E- 5	ATN2,				
GS-10	1710,				

7561 TD OVERHEAD
MEMPHIS

LABOR TYPE AND GRADE			
CDR	1370,		
E- 7	TDC,		
E- 6	TD1,		
E- 5	TD2,		
E- 4	TD3,		
E- 3	TDAN,	AN,	SN,
GS- 4	322,		
GS- 3	322,		
WB- 2	35002,		

7562 TD(A) COURSE
MEMPHIS

LABOR TYPE AND GRADE		
WO- 2	7610,	
E- 9	TDCM,	
E- 8	TDCS,	
E- 7	TDC,	
E- 6	TD1,	SSGT,
E- 5	SGT,	

7620 AVO (O) COURSE
MEMPHIS

LABOR TYPE AND GRADE			
LCDR	6850,		
LT	1100,	6852,	
LTJG	1350,	1325,	1100,
WO- 4	6852,		
E- 9	AVCM,		
E- 8	EMCS,		
E- 7	ATC,		
E- 6	EN1,	AQ1,	
E- 5	TD2,		
E- 4	AZ3,		
E- 3	AN,		
E- 2	AA,		
GS-12	1710,		
GS-11	1710,		
GS- 9	1710,		
GS- 4	322,		
GS- 3	2040,	322,	
WB-12	26014,		
WB- 2	35002,		

7630 MAINT (O) COURSE
MEMPHIS

LABOR TYPE AND GRADE						
LCDR	6852,					
LT	6852,					
WO- 2	7612,					
E- 9	AFCM,					
E- 8	AMCS,	AQCS,	MSGT,			
E- 7	AMSC,	AEC,	AXC,	ATC,	ADJC,	GSGT,
E- 6	AMH1,	AZ1,				
GS- 3	322,					

7563 TD(B) COURSE
MEMPHIS

LABOR TYPE AND GRADE		
LCDR	1315,	
E- 8	TDCS,	
E- 7	TDC,	GSGT,
E- 6	TD1,	
E- 5	SGT,	

7640 MAC (O) COURSE
MEMPHIS

LABOR TYPE AND GRADE	
LT	1355,
LTJG	1355,
WO- 2	7612,
GS- 3	322,

1D CIVILIAN MANPOWER MANAGEMENT

GLYNCO

```
LABOR TYPE
AND GRADE
   E- 7      MMC,
   E- 8     FTG2,
   E- 3     ATAN,
  GS-11      2C1,
  GS- 9      2C1,
  GS- 5      2C2,
  GS- 4      2C2,
  GS- 3      312,
```

1F MILITARY PERSONNEL

GLYNCO

```
LABOR TYPE
AND GRADE
  CDR        131C,
  LCDR       132C,  131C,
  LT         6552,
  LTJG       1358,
   E- 8      PNCS,
   E- 7      AMHC,
   E- 6       PN1,   PN1,
   E- 5       SN2,
   E- 3        SN,
  GS- 4       2C4,
  GS- 3       322,   2C4,
  GS- 2       3C1,
```

1H DATA PROCESSING

GLYNCO

```
LABOR TYPE
AND GRADE
  GS- 7      362,
  GS- 4      359,
  GS- 3      356,
```

21 STORAGE AND WAREHOUSING OPERATIONS

GLYNCO

```
LABOR TYPE
AND GRADE
  LTJG       31CC,  31C5,
   E- 7      ABFC,
   E- 5      ABF2,   SK2,
   E- 3        SA,
   E- 2        SA,
  GS- 7      21C1,
  GS- 6      2134,
  GS- 5      2CC5,  2C5C,  11C4,
  GS- 4      2CC5,  2134,
  GS- 3      2CC5,  2134,
  GS- 2      2CC5,   322,
  WG-1C     54C12,
  WG- 9     69C54,
  WG- 8     46C21, 54C33,
  WG- 6     69CC7,
  WG- 5     69CC7,
  WS-52     69CC7,
```

22 STOCK CONTROL

GLYNCO

```
LABOR TYPE
AND GRADE
  GS- 6      2CC1,
  GS- 3      2CC5,
```

23 TRAFFIC MANAGEMENT

GLYNCO

```
LABOR TYPE
AND GRADE
   E- 7       SKC,
   E- 6       SK1,
  GS- 6      2138,
  WX-45     46C22,
```

27 PROCUREMENT OPERATIONS

GLYNCO

```
LABOR TYPE
AND GRADE
  GS- 6      2C2C,
  GS- 4      2C2C,
  GS- 3       322,
```

AA AIRCRAFT MAINTENANCE DEPARTMENT

GLYNCO

```
LABOR TYPE
AND GRADE
  CDR      131C,
  LCDR     1351,  68CC,
  LT       6852,  131C,
  ENS      1388,
  WC- 3    7411,
   E- 9    AFCM,
   E- 8    AMCS,   ASC,  ASCS,  AMSC,  ATCS,
   E- 7     ATC,   AFC,   AQC,   AKC,  ADJC,  AZC,  ADRC,  AMHC,  AMEC,  AMSC,
   E- 6    ADR1,  AMH1,  AMS1,   MR1,   AT1,   AE1,   AC1,   PR1,  AME1,   AS1,  AK1,
            AZ1,  ADJ1,
   E- 5    ADJ2,   AE2,  ADR2,  AMS2,  AMH2,  ATR2,  ATN2,  ACF2,  ACB2,   PR2,  AME2,
           ASM2,  ASE2,  ASH2,   AK2,   AZ2,
   E- 4    ADJ3,  ADR3,  AMS3,  AMH3,  ATR3,  ATN3,   AE3,  ACF3,   PR3,  ASM3,  ASH3,
            AK3,  AME3,
   E- 3   ADJAN,AMSAN,AMHAN,    AN,  AEAN,ACFAN,  PRAN,AMEAN,ASEAN,    SN,ADRAN,
             AA,
   E- 2      AA,
  GS- 8    2CC1,
  GS- 6     3C1,   3C1,
  GS- 5    2CC8,   3C1,   3C8,
  GS- 4    2CC8,   322,   3C1,
  GS- 3     322,   3C1,
  WG-10   65CC4,
  WG- 8   65CC7,
  WG- 5   35CC2,
```

2CCC COMMAND & EXECUTIVE OFFICE
GLYNCO

LABOR TYPE
AND GRADE
CAPT 131C,
CDR 131C,
LCDR 11CC, 1312,
LT 28C8,
E- 9 RDCM,
E- 7 MMC,
E- 5 YN2,
E- 4 SC3, JO3,
E- 3 SA,
GS- 7 1CE1,
GS- 6 318,
GS- 5 318,
GS- 3 322,

5934 CHIEF PETTY OFFICERS' MESS(OPEN)
GLYNCO

LABOR TYPE
AND GRADE
E- 7 EMC, MMC,
E- 6 ACJ1, EO1,
E- 3 SN,

5942 RETAIL CLOTHING STORE
GLYNCO

LABOR TYPE
AND GRADE
E- 4 SK3,

5937 SPECIAL SERVICES
GLYNCO

LABOR TYPE
AND GRADE
LTJG 11CC,
E- 7 MMC,
E- 6 BT1, EN1, MM1, SF1,
E- 5 CC2, MM2, SFM2, BT2, EN2,
E- 4 BM3, AMS3,
E- 3 FN, SN,
GS-1C 3C1,
GS- 8 825,
GS- 3 322,
WC- 6 47C8, 53C19,
WG- 2 35CC2,

4C DENTAL SERVICES
GLYNCO

LABOR TYPE
AND GRADE
CAPT 22CC,
LCDR 22CC,
LT 22CC, 22C5,
E- 6 DT1,
E- 5 DT2,
E- 3 DN,
GS- 6 682,
GS- 5 682,
GS- 3 681,

4C MEDICAL AND SURGICAL SERVICES
GLYNCO

LABOR TYPE
AND GRADE
CDR 21CC,
LCDR 21CC,
LT 21C8,
E- 8 HMCS,
E- 7 HMC,
E- 6 HM1,
E- 5 HM2,
E- 4 HM3, RD3,
E- 3 HN,
E- 2 FA, HA,
GS- 7 3C1,
GS- 6 61C,
GS- 3 322,

1A COMMAND
GLYNCO

LABOR TYPE
AND GRADE
CDR 1313, 131C,
LT 131C, 28C9, 1355,
E- 9 GMCM,
E- [illegible] YN1,
E- [illegible] YN3, PCSN, SN,
GS-1[illegible] 343,
GS- [illegible] 318, 344,
GS- [illegible] 318, 342,
GS- [illegible] 1C82,
GS- [illegible] 3C1, 312,
GS- [illegible] 322, 312,
GS- [illegible] 3C2, 35C,

1C COMPTROLLER
GLYNCO

LABOR TYPE
AND GRADE
LCDR 131N,
LT 31CC,
E- 7 CKC,
E- 6 CK1,
E- 5 CK2,
E- 3 SN,
GS-11 5C4,
GS- [illegible] 5C1, 560,
GS- [illegible] 54C,
GS- [illegible] 53C, 54C, 53C,
GS- [illegible] 53C, 54C, 545, 318,
GS- [illegible] 5C1, 322, 545,
GS- 2 5C1,

```
                    2300      CIC
                       GLYNCC

LABOR TYPE
AND GRADE
  LCDR       1313, 11CC, 1315,
  LT         1320, 1325, 1310, 1100, 1105,
  LTJG       1100,
  WG- 1      7142,
  GS- 4       222,
```

```
                    2120     PERSONNEL DEPARTMENT
                       GLYNCC

LABOR TYPE
AND GRADE
  LCDR        1310,
  LT          1320,  1100,
    E- 9      PNCM,
    E- 7       PNC,
    E- 6       PN1,   YN1,
    E- 5       PN2,
    E- 4       YN3,   PN3,
    E- 3      YNSN,    SN,  PNSN,
    E- 2        SA,
  GS- 6        204,
  GS- 5        204,
  GS- 4        204,   322,
  GS- 3        204,
  GS- 2        301,
```

```
                    2205     TRAINING ADMINISTRATION
                       GLYNCC

LABOR TYPE
AND GRADE
  CDR        1312, 1310, 1102,
  LCDR       1103, 1312, 1315, 6650,
  LT         6402, 1325, 6600, 6602,
    E- 9     TDCM, AVCM,
    E- 8     TDCS,
    E- 7      RCC,  ENC,  TDC,  ETC,  DSC,  ATC, GSGT, MSGT,
    E- 6      RC1,  SK1,  EN1,  AT1,  ET1,  EM1,  IC1,  MR1,  CC1,  CM1,  TD1,
              TC2,  CS1, SSGT,
    E- 5      RC2,  EN2,  TD2, ETR2, ETN2,  IC2,  MR2,  CS2, ATR2,  SGT,
    E- 4      RC3, ATR3, ETN3,  CS3, ETR3,  TD3,  DM3, ATN3,
    E- 3     RCSN,   SN,   AN, ENFN,ETRSN, TCAN, EMFN, CMSN,ATRAN,
    E- 2     RCSA,   SA,
  GS-12      1710,
  GS-11      1710,
  GS- 9      1670,  301,
  GS- 7       301,
  GS- 4       301,  322,  312,
  GS- 3       335,  318,
  GS- 2       322,  301,
  WG-11    2C166,2C566,2C[illegible],2C668,
  WG-10    2C266,
```

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                    2119     ADMINISTRATION DEPARTMENT
                       GLYNCC

LABOR TYPE
AND GRADE
  LCDR        1315,
  LT          1320,
  ENS         3701,
    E- 8      YNCS,
    E- 7       MMC,   YNC,  SKC,
    E- 6       SM1,   MM1,  RM1,  RD1,  SK1,
    E- 5       MM2,   SM2,  RM2,  RD2,  PC2,
    E- 4      ETR3,   TD3,  DM3,  YN3,  SK3,
    E- 3        SN,    PN,   AN, LISN,
    E- 2        SA,    FA,
  GS- 7       [illegible],
  GS- 5       [illegible],
  GS- 4       [illegible],
  GS- 3       [illegible],
  GS- 2        302,   305,  322,
```

2520 ASAC COURSE

GLYNCO

LABOR TYPE AND GRADE	
LCDR	1312,
LT	1320, 1327, 6602, 1105, 1310, 1315,

2510 AIC COURSE

GLYNCO

LABOR TYPE AND GRADE	
LCDR	1310,
LT	1320, 1327, 1325, 1315, 1310,
LTJG	1105,
GS- 4	322,

2610 ATC OVERHEAD

GLYNCO

LABOR TYPE AND GRADE	
CDR	1310,
LCDR	6612,
E- 8	ACCS,
E- 7	MSGT, ACC,
E- 6	AC1,
E- 3	ACAN,
GS-12	1710,
GS- 4	312,
GS- 3	322,

2630 AC(A) COURSE

GLYNCO

LABOR TYPE AND GRADE	
LT	6612,
E- 8	ACCS,
E- 7	ACC, AGC, GSGT,
E- 6	AC1, SSGT,
E- 5	SGT,
E- 3	AN,
GS- 3	322,

2640 AC(B) COURSE

GLYNCO

LABOR TYPE AND GRADE	
LT	6612,
E- 7	ACC, AGC,
E- 6	AC1,

2650 ATC(O) COURSE

GLYNCO

LABOR TYPE AND GRADE	
E- 8	ACCS,
E- 7	ACC, GSGT,
E- 2	SA,

2660 GCA(O) COURSE

GLYNCO

LABOR TYPE AND GRADE	
LT	6612,
E- 8	ACCM,
E- 7	ACC, MSGT, GSGT,
E- 6	AC1, SSGT,
E- 5	SGT,
E- 3	AN,
E- 2	SA, AA,
GS- 1	301,

2670 CATCC COURSE

GLYNCO

LABOR TYPE AND GRADE	
LT	6612,
E- 8	ACCS,
E- 7	ACC,
E- 6	AC1,
E- 3	AN, SN,
E- 2	AA,

2700 ATC MAINTENANCE OVERHEAD

GLYNCO

LABOR TYPE AND GRADE	
LCDR	6802,
LT	6802,
E- 7	ETC,
GS-12	1710,
GS- 4	332,
GS- 3	322,

2710 CPN-4 MAINTENANCE COURSE

GLYNCO

LABOR TYPE AND GRADE	
WO- 1	7612,
E- 8	ETCM,
E- 7	ETC,
E- 6	ET1,
E- 2	AA,

2730 UPN-36 COURSE

GLYNCO

LABOR TYPE AND GRADE	
E- 8	ETCS,
E- 6	ET1,

2740 GCA ENG COURSE
GLYNCO

LABOR TYPE AND GRADE	
E- 7	ENC,

2750 GCAIRATCC
GLYNCO

LABOR TYPE AND GRADE	
LT	6612, 7662,
LTJG	1100,
WC- 2	7662,
GS- 3	322,

2760 SPN 6112 COURSE (INC. SPN 35,42)
GLYNCO

LABOR TYPE AND GRADE	
WC- 1	7662,
E- 8	ETCM,
E- 7	ETC,
E- 6	ET1,
E- 5	ETR2, ETN2, OS2,

2780 SPN 10 COURSE
GLYNCO

LABOR TYPE AND GRADE	
E- 7	ETC,
E- 2	SA,

2790 MATCV COURSE
GLYNCO

LABOR TYPE AND GRADE	
LT	1100,
E- 7	GSGT,
E- 6	SSGT,
E- 5	SGT,

2810 DIGITAL SYSTEMS
GLYNCO

LABOR TYPE AND GRADE	
CDR	1310,
LCDR	1313,
LT	1320, 1325, 1350,
GS- 9	343,
GS- 7	332,
GS- 6	344,
GS- 5	332,
GS- 4	333,
GS- 3	322, 356,

2331 NTCS COURSE
GLYNCO

LABOR TYPE AND GRADE	
LCDR	1315, 1320, 1310,
LT	1320, 1315,
LTJG	1105,

2410 AEW COURSE
GLYNCO

LABOR TYPE AND GRADE	
CDR	1330,
LT	1330,
GS- 3	322,

2420 AELW COURSE
GLYNCO

LABOR TYPE AND GRADE	
LCDR	1320,
LT	1320, 1327, 1325,
E- 8	ATCS,
E- 7	ATC,

2430 RIC COURSE
GLYNCO

LABOR TYPE AND GRADE	
CDR	1320,
LCDR	1315, 1320, 1310,
LT	6602, 1320, 1325, 1310, 1315,

2440 ATDS COURSE
GLYNCO

LABOR TYPE AND GRADE	
LT	6802, 1320, 1327, 1325, 6852,

2450 BJA COURSE
GLYNCO

LABOR TYPE AND GRADE	
LCDR	1310,
LT	1320, 1325,

C21C ADMINISTRATION DEPARTMENT
LAKEHURST

LABOR TYPE AND GRADE	
CDR	1310,
LCDR	1315,
LT	1320,
E- 7	AKC, ADRC, HMC, CSC, YNC,
E- 6	EM1, YN1, DC1, CM2, AK1, ADR1, HM1, DK1,
E- 5	PL2, TD2, AK2, AMH2, SH2, ADJ2, ATN2, CS2, DK2, YN2,
E- 4	CM3, AK3, SD3, HM3, DT3, HM3, CS3,
E- 3	AN, TDAN, SN, ATNAN,
E- 2	CMSA, SA, TA,
GS-13	1710,
GS- 5	560,
GS- 4	312,
GS- 3	301,
GS- 2	305, 322,
WG- 5	7404,

C10C COMMAND & EXECUTIVE OFFICE
LAKEHURST

LABOR TYPE AND GRADE	
CAPT	1310,
CDR	1310,
LCDR	[illegible]
ENS	110[illegible],
GS- 5	318,

C22C PERSONNEL DEPARTMENT
LAKEHURST

LABOR TYPE AND GRADE	
LT	6802,
ENS	[illegible]
E- 7	PNCS,
E- 6	PN1,
E- 5	PN2,
E- 4	YN3, JO3,
E- 3	PNSN, YNSN, SN,
GS- 4	204,
GS- 3	322,

C24C FIRST LIEUTENANT
LAKEHURST

LABOR TYPE AND GRADE	
LT	[illegible]
WG- [illegible]	[illegible]
E- 7	[illegible]
E- 6	YN1, MM1, PP1,
E- 5	[illegible]
E- 2	FA,

04CC SUPT. OF TRAINING AG SCHOOLS
LAKEHURST

LABOR TYPE AND GRADE	
LCDR	[illegible]
E- 7	AGC,
E- 6	AG1,
E- 5	[illegible]
GS-1[illegible]	1[illegible],
GS- [illegible]	[illegible]

C41C AG(A) SCHOOL
LAKEHURST

LABOR TYPE AND GRADE	
LT	[illegible]
WG- [illegible]	[illegible]
E- [illegible]	[illegible], AGC, MSTC, RPC,
E- 6	[illegible], AG1,
E- 4	[illegible]
GS- 3	322,

C42C AG(B) SCHOOL
LAKEHURST

LABOR TYPE AND GRADE	
E- [illegible]	AGCM,
E- [illegible]	AGCS,
E- 7	ATC, CSGT, MSTC, AGC,
E- 6	AT1, ETR1, AG1,
E- [illegible]	AG[illegible],
E- 4	AG[illegible],
GS-11	1712,

0600 SUPT. OF TRAINING PR SCHOOLS
LAKEHURST

LABOR TYPE AND GRADE	
LCDR	1310,
E- 7	PRC, GSGT,
E- 6	PR1,
E- 5	PR2,
GS-11	1710,
GS- 3	322,

0510 PR(A) SCHOOL
LAKEHURST

LABOR TYPE AND GRADE	
LT	6402,
WO- 1	7102,
E- 9	AFCM,
E- 8	PRCS,
E- 7	PRC, GSGT, MSGT,
E- 6	PR1, ASM1, SSGT,
E- 5	SGT, PR2,
E- 3	PRAN,

0520 PR(B) SCHOOL
LAKEHURST

LABOR TYPE AND GRADE	
WO- 2	7412,
E- 8	PRCS,
E- 7	PRC,
E- 6	SSGT, PR1,

0600 SUPT. OF TRAINING AB SCHOOLS
LAKEHURST

LABOR TYPE AND GRADE	
LCDR	1310,
E- 7	ABEC,
E- 6	ABF1,
GS-11	1710,
GS- 3	[illegible]
GS- 2	322,

0610 TRAINING AB(A) SCHOOLS
LAKEHURST

LABOR TYPE AND GRADE	
LT	6552,
ENS	6551,
E- 8	ABCS,
E- 7	ABHC, ABFC, ABEC,
E- 6	AMS1, AE1, ACF1, ABH1, ABE1, ABF1,
E- 5	ACR2, AC12, ABH2, ABF2, ABE2,
E- 4	ABH3,

0700 TRAINING AB(C) & (C) SCHOOLS
LAKEHURST

LABOR TYPE AND GRADE	
CAPT	1101,
LT	[illegible]
WO- 4	[illegible]
E- 9	ABCM,
E- 8	ABCS, ICCS, EMCS,
E- 7	ABFC, ABEC, MSGT, MMC, ABHC, ICC, GSGT,
E- 6	IC1, ABF1, ABE1, EM1, MM1, SSGT,
E- 5	MM2, ABF2, SGT,
E- 4	ABF3, ABE3, CPL,
E- 3	ABFAN, ABEAN,

3000 COMMAND & EXECUTIVE OFFICE
JACKSONVILLE

LABOR TYPE AND GRADE					
CAPT	1310,				
CDR	1315,	1100,			
LCDR	4100,	1100,	2505,		
LT	4405,	1325,			
E- 9	SMAJ,				
E- 8	FSGT,				
E- 7	SMC,				
E- 6	YN1,	AMH1,	SM1,	MM1,	BT1,
E- 5	SGT,	PN2,	SM2,		
E- 4	SC3,	PN3,	CPL,		
E- 3	LCPL,	AN,			
E- 2	PFC,				
GS-11	EC3,				
GS- 7	312,				
GS- 6	318,				
GS- 4	318,				
GS- 3	322,				
GS- 2	322,				

3120 PERSONNEL DEPARTMENT
JACKSONVILLE

LABOR TYPE AND GRADE						
CDR	1310,					
LCDR	7[illegible],					
LT	1100,					
LTJG	1100,					
E- 8	FSGT,	PNCS,	PNCS,			
E- 7	GSGT,	PTC,	EMC,	PNC,		
E- 6	SSGT,	PN1,	MM1,	PT1,	SM1,	
E- 5	SGT,	PN2,	MM2,	PT2,	RD2,	SM2,
E- 4	CPL,	PN3,				
E- 3	LCPL,	PNSN,	SA,	AN,		
E- 2	PFC,	AA,				
E- 1	PVT,					
GS- 7	204,					
GS- 4	204,	318,	322,	301,		
GS- 3	204,	322,	301,			
WG- 1	3500,					

3110 ADMINISTRATION DEPARTMENT
JACKSONVILLE

LABOR TYPE AND GRADE			
LT	1100,		
LTJG	1100,		
E- 8	MSGT,		
E- 7	GSGT,		
E- 6	SSGT,		
E- 5	SGT,	PC2,	
E- 4	CPL,		
E- 3	LCPL,	CYNSN,	FN,
E- 2	PFC,		
GS-11	341,		
GS- [illegible]	1410,		
GS- [illegible]	344,		
GS- 6	303,		
GS- 4	318,	305,	
GS- 3	318,	305,	
GS- 2	305,		
WG- 1	3500,		

3130 LOGISTICS & RESOURCES DEPT.
JACKSONVILLE

LABOR TYPE AND GRADE				
CDR	1310,			
LT	1310,			
LTJG	1310,			
WO- 1	6110,	7412,		
E- 7	MMC,			
E- 6	MM1,	RC1,	AK1,	
E- 5	MM2,	BT2,	AK2,	
E- 4	AK3,	SK3,		
E- 3	AN,	FN,	AKAN,	SN,
GS- [illegible]	[illegible],			
GS- [illegible]	[illegible],			
GS- [illegible]	[illegible],	3C2,		
GS- [illegible]	[illegible],			
GS- 1	880,			
WG- 1	3500,			

3140 DENTAL DEPARTMENT
JACKSONVILLE

LABOR TYPE AND GRADE	
CAPT	3300,
CDR	[illegible],
LCDR	[illegible],
LT	[illegible],
E- 6	DT1,
E- 4	DT3,
E- 3	DN,
GS- [illegible]	682,

3150 MEDICAL DEPARTMENT
JACKSONVILLE

LABOR TYPE AND GRADE		
LCDR	2100,	
LT	2100,	
E- 7	HMC,	
E- 6	HM1,	
E- 5	HM2,	HT2,
E- 4	HM3,	
E- 3	HN,	

32CC TRAINING ADMINISTRATION
JACKSONVILLE

```
LABOR TYPE
AND GRADE
  CDR        131C,
  LCDR       1412,
  LT         110C,
   E- 7     GSCT,  MMC,
   E- 6      YN1,  BL1,  PH1,  TD1,  DP1, ADJ1,
   E- 5      SGT,  SEN2,  CE2,
   E- 4      CPL,  PH3,  TD3,  DP3, ADJ3,  AE3, AMS3,
   E- 3     LCPL,  SN, TDAN, DPSN,   AN,AMSAN,
   E- 2      PFC,
  GS-13     171C,
  GS-10     171C,
  GS- 9     102C,
  GS- 7     102C,
  GS- 5      318,
  GS- 3      322,
  WG- 1    350E6,
```

33CC AE SCHOOLS ADMINISTRATION
JACKSONVILLE

```
LABOR TYPE
AND GRADE
  CDR        132C,
  LCDR       66C2,
   E- 9      AVCM,
   E- 8      AECS,
   E- 7       AEC,  EMC,GYSGT,
   E- 6       MM1,  BT1,  BM1,  AE1,
   E- 5       YN2,  PN2,  BT2,  AE2,
   E- 3        AN,  SN,
   E- 2       PFC,
  GS-11      171C,
  GS- 5       301,
  GS- 5       322,
  GS- 3       322,
  WG- 1     350E6,
```

332C AE(A) COURSE
JACKSONVILLE

```
LABOR TYPE
AND GRADE
  LTJG       110C,
  WC- 1      66C2,  7612,
   E- 9      AVCM,
   E- 8      AECS,  AVCM,
   E- 7       AEC,GYSGT,
   E- 6       AE1,   AW1,  SSGT,
   E- 5       AE2,   SGT,
   E- 4       AE3,
   E- 3      AEAN,  LCPL,    AN,
   E- 2       PFC,
```

333C AE(B) OVERHEAD
JACKSONVILLE

```
LABOR TYPE
AND GRADE
  LCDR       68C2,
  GS-11      171C,
```

334C AEV(B) COURSE
JACKSONVILLE

```
LABOR TYPE
AND GRADE
  WC- 2      66C1,
   E- 9      AVCM,
   E- 8      AECS,  MSGT,
   E- 7       AEC,GYSGT,
   E- 5       AE2,
   E- 3      LCPL,
```

335C AEI(B) COURSE
JACKSONVILLE

```
LABOR TYPE
AND GRADE
   E- 9      AVCM,
   E- 8      AECS,
   E- 7       AEC,  ATC,GYSGT,
   E- 6       AE1,
   E- 5       AE2,
   E- 3     ATNAN,
```

34CC AO SCHOOLS ADMINISTRATION
JACKSONVILLE

```
LABOR TYPE
AND GRADE
  CDR        131C,
  LCDR       67C2,
  WC- 1      67C2,
   E- 9      ACCM,
   E- 8      ACCS,
   E- 7       ACC,  ADJC,
   E- 6       BT1,  AT1,   AC1,
   E- 5       YN2,  BT2,  ACP2,  AC2,
   E- 4       BM3,
   E- 3        SN,  AN,  LCPL,
   E- 2        AA,
   E- 2        SR,
  GS- 5       3C1,
  GS- 4       322,
  GS- 3       322,
  WG- 1     350E6,
```

242C AC(A) COURSE
JACKSONVILLE

LABOR TYPE AND GRADE	
LT	1100,
WG- 1	6702,
E- 9	ACCM,
E- 8	ACCS, MSGT,
E- 7	ACC, GYSGT,
E- 6	AC1, SSGT, AT1, AE1,
E- 5	AC2, SGT,
E- 3	AN,
WG- 1	35C66,

244C AC(R) COURSE
JACKSONVILLE

LABOR TYPE AND GRADE	
LCDR	1331,
LTJG	1100,
E- 9	ACCM,
E- 8	ACCS,
E- 7	ACC, GYSGT, ACC,
E- 6	AC1, AE1, SSGT,
GS-11	1710,
WG- 1	35C66,

246C AC(M) COURSE
JACKSONVILLE

LABOR TYPE AND GRADE	
LT	6702,
WG- 3	7214,
E- 9	ACCM,

251C RADIOG (C) COURSE
JACKSONVILLE

LABOR TYPE AND GRADE	
LT	6852,
E- 8	AMCS,
E- 7	AMSC, AMHC, GYSGT,
E- 6	AMS1,
E- 5	AMS2,
GS- 3	322,
WG- 1	35C66,

253C MARMECH COURSE
JACKSONVILLE

LABOR TYPE AND GRADE	
LT	1100,
E- 8	MSGT, FSGT,
E- 7	GYSGT,
E- 6	SSGT,
GS- 3	322,

360C CUSTODIAL SERVICES
JACKSONVILLE

LABOR TYPE AND GRADE	
E- 7	MMC,
E- 6	CC1,
E- 5	SFP2,
E- 4	MM3,
E- 3	MMFN, FN, BLCN,

8100 ADMINISTRATION DEPARTMENT
NATTU PENSACOLA

LABOR TYPE AND GRADE	
LT	1310, 1100, 6632, 6852,
LTJG	1105,
E- 9	AVCM,
E- 8	PHCS, ADCS,
E- 7	PNC, SKC, AMC, ADRC, PHC, AKC, AMSC,
E- 6	CS1, MM1, PH1, AK1, AME1, AMS1, ADR1, AT1, AZ1,
E- 5	PN2, YN2, CS2, AT2, ALL2, AE2, ATN2, PR2, AMS2, ADR2, AK2,
E- 4	JO3, PN3, YN3, ALL3, AK3, ATN3, ADR3, AMH3, AE3, AZ3,
E- 3	SN, AN,
E- 2	SA, AA,
GS- 9	1710,
GS- 6	801,
GS- 5	334, 1710,
GS- 4	204,
GS- 3	303, 204, 322, 2040,
GS- 2	301, 322, 2040,
WB- 8	5900,
WE- 1	3506,

8000 COMMAND & EXECUTE
NATTU PENSACOLA

LABOR TYPE AND GRADE	
CAPT	1310,
CDR	1310,
LT	1325,
E- 6	PN1,
E- 4	YN3,
GS- 5	318,
GS- 2	302,

8200 TRAINING DEPARTMENT OVERHEAD
NATTU PENSACOLA

LABOR TYPE AND GRADE	
LT	1100,
E- 9	PHCM,
E- 7	PHC,
E- 6	PH1,
E- 5	DM2, PH2, SGT,
E- 4	PH3,
E- 3	PHAN,
GS-10	1710,
GS- 9	1710,
GS- 4	322,
GS- 3	322,
GS- 2	322,

8240 PH(A) SCHOOL
NATTU PENSACOLA

LABOR TYPE AND GRADE	
LT	6632,
WO- 4	6311,
E- 8	PHCS,
E- 7	PHC, MYSGT,
E- 6	PH1, SSGT,
E- 5	PH2, SGT,
E- 2	AA,
GS- 3	322,
GS- 2	322, 2040,

8270 PH RECON (O)
NATTU PENSACOLA

LABOR TYPE AND GRADE	
LCDR	6631,
E- 7	PHC, MYSGT, PTC,
E- 6	PH1,
E- 5	PH2,
E- 3	SN, PHAN,
GS- 2	322,

8300 MOPIC(C) SCHOOL
NATTU PENSACOLA

LABOR TYPE AND GRADE	
LT	6632,
E- 8	PHCS,
E- 7	PHC,
E- 6	PH1,
E- 3	AN,
E- 2	AA,

8320 PHER COURSE
NATTU PENSACOLA

LABOR TYPE AND GRADE	
LT	6632,
E- 8	PHCS,
E- 7	PHC, ATC, MYSGT,
E- 6	PH1, AT1,
E- 5	PH2, SGT,
E- 3	AN,
GS- 2	2040,

FINAL PRODUCTS INPUT FOR MEMPHIS							
COURSE TITLE	NUMBER	GRADUATIONS (1969)				MONTHLY AVERAGE	ANNUAL RATE
		JAN	FEB	MAR	APR		
NAMTRAGRU		6668	8966	8208	8600	8110.5	97326
AFUM(P)	7430	1967	1433	1643	2011	177.6	21312
AMFU	7440	926	1128	838	941	958.25	11499
AUCC(O)	7450	24	20	14	8	16.5	198
ADR(A)	7462	163	217	170	170	180	2100
ADJ(A)	7463	217	324	267	260	267	3204
ADR(B)	7464	3	15	17	21	14	168
ADJ(B)	7465	22	27	23	31	25.75	309
AS(A)	7466	25	55	64	55	49.75	597
BASHEL(C)	7467	42	62	64	93	65.25	783
AME(A)	7472	50	76	69	81	69	828
AMS(A)	7473	169	129	199	215	183	2196
AMH(A)	7474	98	133	124	149	126	1512
AME(B)	7475	9	4	8	11	8	96
AMS(B)	7476	3	24	18	21	16.5	198
AMH(B)	7477	11	6	11	8	9	108
AK(A)	7482	25	16	22	26	22.25	267
AZ(A)	7483	24	49	13	34	30	360
MARAK(C)	7484	23	42	49	55	42.25	507
MAROAC(C)	7485	18	33	14	6	17.75	213
DAC(C)	7486	11	25	22	23	20.25	243
AFU(A)	7820	614	662	485	625	596.5	7158
AQ(A)	7830	88	206	203	172	167.25	2007
AT(A)	7842	162	221	223	147	185.25	2256
AW(A)	7843	60	74	75	81	72.5	870

Figure 5-1. Final Products Input (Sheet 1 of 4)

Figure 5-1. (Cont'd) (Sheet 2 of 4)

FINAL PRODUCTS INPUT FOR MEMPHIS (CONT'D)

COURSE TITLE	NUMBER	GRADUATIONS (1969)				MONTHLY AVERAGE	ANNUAL RATE
		JAN	FEB	MAR	APR		
AV(B)	7552	0	11	0	15	6.5	78
AVI(B)	7553	49	75	22	53	49.75	597
TD(A)	7562	20	21	14	19	18.5	222
TD(B)	7563	5	5	4	6	5	60
AVO(O)	7620	1	1	1	1	1	12
MAINT(O)	7630	9	18	23	19	17.25	207
MAC(O)	7640	4	5	7	6	5.5	66
						Annyal System FPOR →	157620

FINAL PRODUCTS INPUT FOR GLYNCO

COURSE TITLE	NUMBER	GRADUATIONS (1969)				MONTHLY AVERAGE	ANNUAL RATE
		JAN	FEB	MAR	APR		
CIC(O)	2320	6	8	20	12	11.5	138
NTDS	2331	11	0	0	8	4.75	57
AEW(O)	2[illegible]10	0	3	0	0	0.75	9
AELW	2420	4	6	11	9	7.5	90
RIO	2430	22	16	28	28	23.5	282
ATDS	2440	8	0	8	0	4	48
BJN	2450	17	19	18	25	19.75	237
AIC	2510	25	17	26	18	21.5	258
ASAC	2520	8	0	11	8	6.75	81
AC(A)	2630	31	58	66	92	61.75	741
AC(B)	2640	9	5	10	8	5.75	69
ATC(O)	2650	6	4	7	6	5.25	69

Figure 5-1. (Cont'd) (Sheet 3 of 4)

FINAL PRODUCTS INPUT FOR GLYNCO (CONT'D)

COURSE TITLE	NUMBER	GRADUATIONS (1969)				MONTHLY AVERAGE	ANNUAL RATE
		JAN	FEB	MAR	APR		
GCA(O)	2660	32	22	51	40	36.25	435
CATCC	2670	12	20	14	22	17	204
CPN-4	2710	3	4	6	6	4.75	57
FPN-36	2730	1	1	1	3	1.5	18
GCA ENG.	2740	0	3	0	4	1.75	21
GCA/RATC	2750	3	1	0	1	1.25	15
SPN 6/12	2760	4	0	4	3	2.75	33
SPN10	2780	0	0	4	2	1.5	18
MATCV	2790	0	0	3	0	0.75	9
						Annyal System FPOR ———	2989

FINAL PRODUCTS INPUT FOR NATTC JACKSONVILLE

COURSE TITLE	NUMBER	GRADUATIONS (1969)				MONTHLY AVERAGE	ANNUAL RATE
		JAN	FEB	MAR	APR		
AE(A)	3320	145	260	257	244	226	2718
AEV	3340	5	11	14	9	9.75	117
AEI	3350	4	11	15	9	9.75	117
AO(A)	3420	118	167	178	190	163.25	1959
AO(B)	3440	24	13	19	18	18.5	222
AOMD	3460	0	1	1	1	0.75	9
NDIC	3510	3	12	0	15	7.5	90
MARMEC	3530	0	10	0	12	5.5	66
						Annual System FPOR ———	5298

Figure 5-1. (Cont'd) (Sheet 4 of 4)

FINAL PRODUCTS INPUT FOR NATTC LAKEHURST							
COURSE TITLE	NUMBER	GRADUATIONS (1969)				MONTHLY AVERAGE	ANNUAL RATE
		JAN	FEB	MAR	APR		
AG(A)	0410	17	23	33	39	28	336
AG(B)	0420	6	6	6	6	6	72
PR(A)	0510	40	77	43	46	51.5	618
PR(B)	0520	11	2	18	21	13	156
AB(A)	0610	17	51	119	72	64.75	777
AB(C+O)	0700	149	187	159	83	144.50	1734
						Annual System RPOR	3593

FINAL PRODUCTS INPUT FOR NATTU PENSACOLA							
COURSE TITLE	NUMBER	GRADUATIONS (1969)				MONTHLY AVERAGE	ANNUAL RATE
		JAN	FEB	MAR	APR		
PH(A)	8240	42	41	40	54	44.25	531
PN(B)	8250	8	11	13	14	11.5	138
PHRECON(O)	8270	2	0	0	2	1	12
MOPIC	8300	8	0	0	8	4	48
PHER(C)	8320	9	0	0	9	4.5	54
						Annual System FPOR	783

NAS MEMPHIS			
COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
1C30	Budget and Statistics	X	
1D70	Safety	X	
1H20	ADP Analysis and PR	X	
1J20	Office Services	X	
1R10	Incentive Awards	X	
1R30	Mil Cost Variance	X	
1R80	Acq of Minor Prop	X	
1R90	Acq of Plant Prop	X	
1RB0	Maint of Minor PR	X	
2123	Bin Issue		X
2139	Gen Storage Support	X	
2143	Quality Control	X	
2190	Gen St and Whse Support	X	
2790	Overall Supply Management	X	
6A20	Rapid Communications	X	
6A60	Comm/Admin Telephone	X	
6B40	Shore Patrol	X	
6B80	Brigs	X	
6C30	Terminal Operation		X
6F30	Organic Maintenance	X	
1RA0	Inst of PP	X	
6110	General Trsp Services	X	
62A0	Sedans		X
62B0	Bus BCC 37Pass/UN		X
62E0	Station Wagons		X
62F0	Ambulances		X
62G0	Pickup Truck 1/2-Ton		X
62H0	Cry/All-Panels-JP		X
62I0	Trk/Trk Trac IT		X
62J0	TK/TK Trac 11/2-2		X
62K0	TK/TK Trac 21/2T		X
62M0	TK/TK Trac 5-10T		X
63A0	Sedans		X
63B0	Bus BCC 37Pass/Un		X
63E0	Station Wagon		X
63F0	Ambulances		X
63G0	Pickup Trk 1/2-Ton		X
63H0	Cry/All-Panels-JP		X
63J0	TK/TK Trac 1-1/2-Ton		X

NAS MEMPHIS (Cont'd)			
COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
63K0	TK/TK Trac 2-1/2-Ton		X
63M0	Tk/Tk Trac 5-10-Ton		X
6420	Trk Spec Purp/Des		X
6430	Fire Fighting Equipment		X
6440	Misc and Uncoded Equipment		X
64P0	Trailers		X
64Q0	Weight Lifting Equipment		X
64R0	Mail Handling Equipment		X
6450	Const Eq-Util Req		X
64T0	Con Eq-No Util Req		X
64L0	Grnd Maint Equip		X
65W0	Railroad Locomotive		X
64Y0	Wght Handling Equip		X
6520	Trk Spec Purp/Des		X
6530	Fire Fighting Equipment	X	
6540	Misc and Uncoded Equipment	X	
65P0	Trailers		X
6500	A/C Ground Support Ops		X
65R0	Mail Handling Equipment		X
65S0	Const Eq-Util Req		X
65T0	Con Eq-No Util Req		X
65U0	Grnd Maint Equip		X
65W0	Railroad Locomotive		X
65Y0	Wght Handling Equipment		X
6660	Oper/Adm Rented V		X
6710	Chauffeurs/Driver	X	
6720	Trainmen	X	
6810	Disp and Serv Sta A	X	
6820	Indirect Ops	X	
6830	Oper Supervisor	X	
6840	Oper Costs-Other	X	
6930	Maint Supervisor	X	
6940	Maint Costs-Other	X	
6950	Allowed Time	X	
7110	Training	X	
7120	Maint and Production		X
7140	Storage		X
7150	Medical		X
7170	Enl Barracks Men	X	

REASONS FOR NOT MODELING THESE SUBCOST CENTERS:
A: No work units reported.
B: Labor assigned could not be identified from OPNAV 5320.

Figure 5-2. Subcost Centers Not Modeled
(Sheet 1 of 6)

Figure 5-2. (Cont'd) (Sheet 2 of 6)

NAS MEMPHIS

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
7180	Enl Barracks Women		X
7190	Detached Facility		X
71A0	Bachelor Off Qtrs		X
71J0	Community Facility		X
71K0	Comm/Traffic Aids		X
71L0	Airfield Tower/Te		X
71M0	Other Land Oper B		X
71N0	Ammunition Storage		X
71P0	Cold Storage Plant		X
7310	Roads and Streets		X
7320	Airfield Runways		X
7330	Other A/F Pavement		X
7340	Other Areas/Open		X
7350	Other Sidewalks/P		X
7410	Improved Grounds		X
7430	Semi-Improved		X
7440	Unimproved Ground		X
7450	Drainage		X
7510	RR and Crane Track		X
7520	Liquid Fuel Disp		X
7530	O/T Bldg Comm/Tra		X
7540	Comm Line O/T Adm		X
7550	A/F Paving Lighting		X
7560	Land Oper O/T Bldg		X
7570	Trng Struct O/T B		X
7590	M and P Fac O/T Bldg		X
75D0	Other Admin Struc		X
75F0	Comm Pers O/T Bldg		X
75G0	Morale Welfare/Rec		X
75H0	Refuse Disp Facility		X
75J0	Cool/Refrig 25		X
75K0	Cool/Refrig 5/25		X
75L0	Fences/Walls/Gate		X
75M0	Maint Antennas/Sys		X
75P0	Non-Navy Real Pro	X	
7620	Heat Over 3500000		X
7650	Water Sup Trmt/St		X
7690	Comp Air Plants/S		X
76A0	A/O Plt Eqp 0/25		X
76B0	A/C Plt Eqp 5/25		X
76D0	Cool/Refrig Cl 3		X
76E0	Other Misc Utility		X
76F0	Water Storage Fac		X

NAS MEMPHIS (Cont'd)

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
7710	Electrical		X
7720	Steam and Hot Water		X
7730	Potable Water Fac		X
7760	Sewage/Ind Waste		X
7770	Gas Dist Facility		X
7780	Comm Sys/Admin Te		X
7790	Fire/Other Alarms		X
7810	Prev Maint Insp	X	
7820	Emerg/Wrk Real/Pr		X
7910	Maint Shop Overhead	X	
7920	Maint Control Div	X	
7930	Const/Gr Maint Equip	X	
8210	Stm/Hw over 3.5 M		X
8330	Electricity Dist		X
8350	Purchased Elec		X
8410	Potable Water Plant		X
8420	Potable Water D/S		X
84D0	Cost Trsf Acct 77	X	
84P0	Cost Trsf 7650/76	X	
8510	Sewage Trmt P.P P		X
8520	Sewage Dist System		X
8610	A/C Refrig 5/25 T		X
8630	A/C Refrig 25VP		X
87C0	Other Util Sys PP	X	
8810	Gen Util C/H Cos	X	
9210	Custodial Service		X
9220	Insect and Rodent C		X
9230	Refuse and Gar Dis		X
9240	Exterior Clean-Up		X
9250	Emer Ser-Not Real		X
9260	Intra-Station Mcv		X
9280	Dyn Equip Insp/Ser	X	
9290	Other Maint and Ser		X
92B0	Maint/Rep Dehumic	X	
92D0	Maint/Rep Ref Ov		X
9380	Fire Protection/S	X	
9943	Retail Clothing S		X
9961	Aug Pers Supp Equip	X	

REASONS FOR NOT MODELING THESE SUBCOST CENTERS

A: No work units reported

B: Labor assigned could not be identified from OPNAV 5320

Figure 5-2. (Cont'd) (Sheet 3 of 6)

NAMTRAGRU MEMPHIS			
COST CODE	CLASSIFICATION TITLE	REASON A	B
5514	Resources Mgmnt Dept	X	
5515	Trainer Maint Dept	X	

NATTC MEMPHIS			
COST CODE	CLASSIFICATION TITLE	REASON A	B
7120	Personnel Department	X	
7130	Logistics & Resources Dept	X	
7300	Training Administration	X	
7420	A/C Maintenance	X	
7531	AT(B) Overhead	X	
7610	NAOS(O) Overhead	X	
7710	TRAFAC Overhead	X	
7720	Instructor Training Course	X	
7730	Programmed Instruction Crse	X	

NAS GLYNCO			
COST CODE	CLASSIFICATION TITLE	REASON A	B
1B10	Management Eng	X	
1C20	Internal Review	X	
1C30	Budget & Statistics	X	
1D20	Employment		X
1D40	Employee Relations		X
1D50	Employee Services		X
1D70	Safety	X	
1E40	Training	X	
1H50	ADP Clerical Oper	X	
1J20	Office Services	X	
1R10	Incentive Awards	X	
1R30	Military Cost	X	
1R80	Acq of Minor Prop	X	
1R90	Acq of Plant Prop	X	
1RA0	Install Class 3 P	X	
1RB0	Maint of Minor PR	X	
1RE0	Disaster Prep	X	
2129	Packing/Issue Sup	X	

NAS GLYNCO (Cont'd)			
COST CODE	CLASSIFICATION TITLE	REASON A	B
2133	Preservation Pack	X	
2139	Gen Storage Support	X	
2142	Customer Serv Store		X
2143	Quality Control	X	
2190	Gen St & Whse Supply	X	
2390	Traffic Mgmt Supply	X	
2400	Oval Supply Dept	X	
2710	Procurement Plan		X
2790	Oval Management	X	
2820	Contract Admin		X
2850	Contractor Payments		X
3A10	Msmt/Accountabily		X
3A20	Screening/Ident		X
3A30	Receipt		X
3A40	Shipment		X
3A50	Scrap Operations		X
3A80	Inter-Instal Trans		X
3AD0	Ber & Timber OPNS	X	
6AE0	Comm/Admin Tele		X
6A80	Telephone		X
6F10	Operation of Acft		X
6F20	Flight Time	X	
6210	General Trsp Serv	X	
6290	Accident Repairs	X	
62A0	Sedans		X
6280	Bus Boc 37 Pass/un		X
62E0	Station Wagons		X
62F0	Ambulances		X
62G0	Pickup Trk 1/2T		X
62H0	Cry/all-Panels-Jp		X
62J0	Tk/Tk Trac 1-1/2-		X
62M0	Tk/Tk Trac 5-10T		X
6420	Trk Spec Purp/Des		X
6430	Fire Fighting Equip		X
6440	Misc & Uncoded Equip		X
6450	Other costs	X	
64P0	Trailers		X
64Q0	A/C Grnd Supp Equip		X

REASONS FOR NOT MODELING THESE SUBCOST CENTERS:
A: No work units reported
B: Labor assigned could not be identified from OPNAV 5320

Figure 5-2. (Cont'd) (Sheet 4 of 6)

NAS GLYNCO (Cont'd)

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
64R0	Matl Handling Equip		X
64S0	Const Eq-Util Req		X
64T0	Con Eq-No Util Req		X
64U0	Grnd Maint Equip		X
64V0	Railroad Cars		X
64W0	Railroad Locomotive		X
64Y0	Whst Handling Equip		X
6520	Trk Spec Purp/Des		X
6530	Fire Fighting Equip	X	
6540	Misc and Uncoded Equip		X
6550	Other Oper Costs	X	
65P0	Trailers		X
65Q0	A/C Grnd Supp Oper		X
65R0	Matl Handling Equip		X
65S0	Const Eq-Util Req		X
65T0	Con Eq-No Util Req		X
65U0	Grnd Maint Equip		X
65V0	Railroad Cars		X
65W0	Railroad Locomotive		X
65Y0	Wght Handling Equip		X
6710	Chauffeurs/Driver		X
6720	Trainmen		X
6810	Disp and Serv Sta A	X	
6820	Allocated Cost Cr	X	
6830	Oper Supervisor	X	
6840	Oper Costs-Other	X	
6850	Allowed Time	X	
6930	Maint Supervisor	X	
6940	Maint Costs-Other	X	
6950	Allowed Time	X	
6960	Misc Maint Costs	X	
6110	General Trsp Serv	X	
62A0	Sedans	X	
62E0	Station Wagons	X	
62F0	Ambulances	X	
6A80	Telephone	X	
7110	Training		X
7120	Maint and Production		X
7140	Storage		X

NAS GLYNCO (Cont'd)

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
7150	Medical		X
7170	Enl Barracks Men	X	
7180	Enl Barracks Women		X
7190	Detached Facility		X
71A0	Bachelor Off Qtrs		X
71B0	Fam Fsg-Enc	X	
71C0	Fam Hsg-Opq	X	
71J0	Community Facility		X
71K0	Comm/Traffic Aids		X
71L0	Airfield Tower/Te		X
71M0	Other Land Oper B		X
71N0	Ammunition Storage		X
7130	Roads and Streets		X
7320	Airfield Runways		X
7330	Other A/F Pavement		X
7340	Other Areas/Open		X
7350	Other Sidewalks/P		X
7410	Improved Grounds		X
7430	Semi-Improved		X
7440	Unimproved Ground		X
7450	Drainage		X
7510	RR and Crane Tracks		X
7520	Liquid Fuel Disp		X
7530	O/T Bldg Comm/Tra		X
7550	A/F Paving Lighting		X
7560	Land Oper O/T Bldg		X
7570	Trng Struct O/T B		X
7590	M and P Fac O/T Bldg	X	
7500	Other Admin Struc		X
75F0	Comm Pers O/T Bldg		X
75G0	Morale Welfare/Rec		X
75H0	Refuse Disp Facility		X
75J0	Cool/Refrig Over2	X	
75K0	Cooling/Refrig 5/		X
75L0	Fences/Walls/Gate		X
75P0	Non-Navy Real Pro		X
7610	Elec Generating P		X
7620	Heat Over 3500000		X
7630	Heating Over 3.5M		X

REASONS FOR NOT MODELING THESE SUBCOST CENTERS:
A: No work units reported
B: Labor assigned could not be identified from OPNAV 5320

Figure 5-2. (Cont'd) (Sheet 5 of 6)

NAS GLYNCO (Cont'd)

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
7650	Water Sup Trmt/St		X
7660	Water Supp/Fire P	X	
76A0	A/C Plt Eqp 0/25		X
76B0	A/C Plt Eqp 5/25		X
76E0	Other Misc Utility	X	
76F0	Water Storage Fac		X
7710	Electrical		X
7720	Steam and Hot Water		X
7730	Potable Water Fac		X
7740	Non-Pot Water Fac		X
7750	Dist Sys/Fire Pro		X
7760	Sewage/Ind Was[illegible]		X
7770	Gas Dist Facility		X
7790	Fire/Other Alarms		X
7820	Emerg/Wrk Real/Pr		X
7840	Maint Bldgs and Strucs	X	
7910	Maint Shop Overhead	X	
7920	Maint Control Div	(	
7930	Const/Gr Maint Equip	X	
7180	Enl Bks W/O	X	
7180	Mil Fam Hsng Enc		X
7100	Mil Fam Hsng Main		X
7180	Mil Fam Hsng Op		X
71G0	Mil Fam Hsng Maint		X
71J0	Community Facilit	X	
8110	Stm/Hot Watr Prod		X
8120	Stm/HW 750000-3.5M		X
8210	Stm/HW Over 3.5M		X
8220	Stm/Hot Wtr 3.5M		X
8320	Elec/Plant Opers	X	
8330	Electricity Dist	X	
8350	Purchased Elec		X
8410	Potable Water Plant		X
8420	Potable Water D/S		X
84P0	Ocst Trsf 7650/76	X	
8510	Sewage Trmt P/P P		X
8520	Sewage Dist System		X
8500	Sewage Dist Sys	X	
8610	A/C Refrig 5/25 T		X

NAS GLYNCO (Cont'd)

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
8620	A/C & Ref 5-25T D		X
8630	A/C Refrig Over @		X
8750	Gas Prod Plnt/Pur	X	
8700	Other Util Sys PP	X	
87E0	Other Util Sys/Di	X	
8810	Gen Util O/H Costs	X	
9110	Admin-Cth Th Fam		X
9230	Refuse and Garb Dis		X
9240	Exterior Clean-Up		X
9250	Emer Ser-Not Real		X
9260	Intra-Station Mov		X
9280	Dxn Equip Insp/Se	X	
9290	Other Maint and Ser		X
9320	Rents/Leases Real	X	
9340	T Cost Invest Ite	X	
9380	Fire Protection/S	X	
9390	Fire/Aircraft/Res	X	
9936	Enl Mens Club		X
9939	Family Serv Center	X	
9943	Retail Clothing S		X
9961	Auq Pers Supp Equip	X	
9962	Maint/Rep Pers Su		X
9968	Other Nonapp Funds	X	

NATTC GLYNCO

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
2130	Logistics & Resources Department		X
2310	CIC Overhead		X
2410	AEW Overhead		X
2420	AELW Course	X	
2510	AIC Overhead	X	
2820	TRAFAC Overhead	X	
2830	ATC Maint	X	
2640	Digital Maint	X	
2650	Training Aids	X	
2860	Surface Electronics	X	

REASONS FOR NOT MODELING THESE SUBCOST CENTERS:
A: No work units reported
B: Labor assigned could not be identified from OPNAV 5320

Figure 5-2. (Cont'd) (Sheet 6 of 6)

NATTC GLYNCO (Cont'd)

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
2870	Avionics Maint	X	
2880	MAD Summary		X

NATTU PENSACOLA

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
8110	Logistics & Resources Dept	X	
8120	Camera Repair Shop	X	
8210	Aircraft Oper	X	
8220	Training Lab	X	
8230	Chem Mix-Mopic Process	X	
8260	PH(B) School 3	X	
8280	PH(B) Special Photo	X	
8290	PH(B) Quality Control	X	
8310	Cam Rep (C) School	X	
8330	Pres Course	X	
8400	Organizational Maint	X	

NATTC JACKSONVILLE

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
3310	AE(A) Overhead	X	
3410	AO(A) Overhead	X	
3430	AO(B) Overhead	X	
3450	AO(M) Overhead	X	
3500	RADIOG (C) Overhead	X	
3520	MARMECH Overhead	X	
3700	Minor Construction		X
3800	MAD Summary		X

NATTC LAKEHURST

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
0310	Training Aids Branch	X	
0320	Aviation Fundamentals Crse		X
0430	AG(C)School	X	
0440	AG(C)Mets Course		X
0450	AG(C)ASWEPS Course		X

NATTC LAKEHURST (Cont'd)

COST CODE	CLASSIFICATION TITLE	REASON A	REASON B
0460	AG(C)Radset Course		X
0530	PR(C)School	X	
0620	ABE(A)School		X
0630	ABH(A)School		X
0640	AB School Testing	X	
0650	ABF(A)School		X
0660	AB Programming	X	
0670	Catapult C-7/11		X
0680	Catapult C-13		X
0690	CVS		X
0710	A/C Launch/Rec Trng	X	
0720	ABF(C) Course		X
0730	ABE(C) Course	X	
0740	Optical Landing Sys Crse		X
0750	Air Dept Officer Indoc		X
0760	Catapult (Steam) Course		X
0770	Catapult (Elec) Course		X
0780	Short Airfield Tact Sup		X
0800	Aircraft Operations		X
0810	Custodial Services	X	
0830	Ground Maintenance	X	
0840	Maint of Real Prop	X	
0880	MAD Summary	X	

REASONS FOR NOT MODELING THESE SUBCOST CENTERS:
- A: No work units reported
- B: Labor assigned could not be identified from OPNAV 5320

SECTION 6

PROCESS ANALYSIS

6. Process Analysis

PRODUCT DISTRIBUTION RULES

> Users of the Manpower Allocation Model for CNATECHTRA must be aware of the intermediate product distribution rules for each air station. Accordingly, the distribution rules are listed by subcost center for the five air stations.

The following pages contain intermediate product distribution rules, listed by subcost center, by the appropriate cost center for NAS Memphis (including NATTC and NAMTRAGRU), NAS Glynco (including NATTC), NATTC Jacksonville, NATTC Lakehurst and NATTU Pensacola. The following abbreviations are used:

O = Officers
E = Enlisted Men
C = Civilians
S = Students

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS MEMPHIS

(SHEET 1 of 8)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
1A	COMMAND		
1A10	Command and Executive Offices	Average number of personnel at NAS	All cost centers at NAS % O,E,C
1A30	Public Information Office	Number of actions completed	All cost centers at NAS % O,E,C
1A40	Legal Office	Number of legal cases	All cost centers at NAS % O,E
1C	COMPTROLLER		
1C10	Administration	Average number of personnel in cost center 1C	Internally consumed in 1C
1C20	Internal Review	Number of studies and audits completed	1A Command
1C40	Accounting	Number of documents processed	All cost centers at base % O,E,C,S
1C50	Payroll	Number of civilians on payroll	All cost centers at base % C
1C70	Disbursing	Number of transactions	All cost centers at base % O,E,S
1D	CIVILIAN MANPOWER MANAGEMENT		
1D10	Administration	Number of civilians on base	All cost centers at base % C
1D20	Employment	Number of personnel actions	Internally consumed in 1D
1D30	Wage and Classificati[illegible]	[illegible]r of classifica-[illegible]s completed	All cost centers at base % C
1D60	Training	Number of students enrolled	All cost centers at base % C
1E	MILITARY PERSONNEL		
1E10	Administration	Number of military personnel	All cost centers at NAS % O,E
1E20	Officer Personnel Records	Number of officers records	All cost centers at NAS % O
1E30	Enlisted Personnel Records	Number of enlisted personnel records	All cost centers at NAS % E

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS MEMPHIS

(SHEET 2 of 8)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
1E40	Training	Number of students enrolled	All cost centers at NAS % E
1H	DATA PROCESSING		
1H10	Administration	Number of personnel	Internally consumed at 1H
1H30	ADP Operations	Equipment operating hours	All cost centers at base %.0,E,C,S
1H40	Key Punch Operations	Number of cards	All cost centers at base % 0,E,C,S
1H50	ADP Clerical Operations	Number of documents processed	All cost centers at base % 0,E,C,S
1J	ADMINISTRATIVE OFFICE SUPPLIES		
1J10	Printing and Reproduction	Number of documents processed	All cost centers at NAS % 0,E,C
21	STORAGE AND WAREHOUSING OPERATIONS		
2110	Receipt	Measurement ton	All cost centers at base % 0,E,C
2121	Packing	Unit Packs	All cost centers at base % 0,E,C
2124	Shipping	Measurement ton	All cost centers at base % 0,E,C
2131	Care of Material in Storage	Measurement ton	All cost centers at base % 0,E,C
2133	Preservation and Packaging	Weighted unit packages	All cost centers at base % 0,E,C
2136	Physical Inventory	Line items	All cost centers at base % 0,E,C
2141	Bulk Fuel and Lubricating Oil	Barrels	All cost centers at base % 0,S
2142	Customer Service Stores	Line items issued	All cost centers at base % 0,E,C physically at base
22	STOCK CONTROL		
2210	Requisition Processing	Line Items	All cost centers at base % 0,E,C

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS MEMPHIS

(SHEET 3 of 8)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
2200	Other Stock Control Operations	Line items	All cost centers at base % O,E,C
23	TRAFFIC MANAGEMENT		
2310	Freight Management	Line items	Thruput (not in process analysis)
2330	Household Goods	Applications	All cost centers at base % O,E,S
27	PROCUREMENT OPERATIONS		
2720	Contract Execution	Procurement line items processed	Thruput (not in process analysis)
AA	AIRCRAFT MAINTENANCE DEPARTMENT		
AA10	Administration	Number of personnel	Internally consumed at AA
AA20	Quality Control	Number of inspections	Internally consumed at AA
AA30	Material Control	Number of line items	Internally consumed at AA
AA40	Power Plant (Engines)	Work orders completed	All cost centers at base % O (with 1310 designator)
AA50	Airframes	Work orders completed	All cost centers at base % O (with 1310 designator)
AA60	Avionics	Work orders completed	All cost centers at base % O (with 1310 designator)
AA80	Aviators Equipment	Work orders completed	All cost centers at base % O (with 1310 designator)
AA90	Support Equipment	Work orders completed	All cost centers at base % O (with 1310 designator) physically at base
4C	MEDICAL AND SURGICAL SERVICES		
4C00	Medical	Number of patients	All cost centers at base % O,E,S physically at base

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS MEMPHIS

(SHEET 4 of 8)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
4D	DENTAL SERVICES		
4D00	Dental	Number of visits	All cost centers at base % O,E,S physically at base
6A	COMMUNICATIONS		
6A10	Administration	Average number of personnel performing communication/function	Internally consumed in 6A
6A30	Telegraph	Number of messages	All cost centers at base % O,E,C physically at base
6A40	Administration Telephone Distribution Systems	Main stations	Internally consumed in 6A
6A80	Telephone	Number of off-station calls	All cost centers at base % O,E,C physically at base
6B	SECURITY		
6B10	Administration	Number of people performing function	Thruput (not in process analysis)
6C	AIR OPERATIONS		
6C10	Administration	Number of personnel in air operations	Internally consumed in 6C
6C20	Aircraft Control	Number of take-offs and landings	All cost centers at base % O (with 1310 designator physically at base
6C50	Ground Electronics	Cubic feet of electronic devices repaired or maintained	All cost centers at base % O (with 1310 designator) physically at base
6C60	Photographic Services	Number of pictures	All cost centers at base % O
6F	OPERATION OF AIRCRAFT		
6F30	Aircraft Maintenance, Organic	Number of work orders completed	All cost centers at base % O (with 1310 designator) physically at base

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS MEMPHIS

(SHEET 5 of 8)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
99	PERSONNEL SUPPORT		
9911	Mess Halls and Galleys	Daily rations issued	All cost centers at base % O,E,S physically at base
9921	Barracks	Number of residents	All cost centers % E,S physically at base
9922	BOQ	Number of residents	All cost centers % O physically at base
9931	Chaplains Office	Number of military personnel served	All cost centers % O,E,S physically at base
9932	Commissioned Officers Mess (Open)	Officer population	All cost centers % O physically at base
9934	Chief Petty Officers Mess (Open)	Eligible personnel	All cost centers % E physically at base
9937	Special Services	Military population served	All cost centers % O,E,S physically at base
9939	Family Service Center	No work unit	All cost centers % O,E,S physically at base
9941	Commissary Store	Volume of sales	All cost centers % O,E,S physically at base
9943	Retail Clothing Store	Volume of sales	All cost centers % O,E,S physically at base
9962	Maint/Red Pers SU	Work orders completed	All cost centers % O,E,S physically at base
7000	Command & Executive Office	Average number of personnel at NATTC	All cost centers at NATTC % O,E,C,S
7110	Administration Department	Number of personnel supported	All cost centers at NATTC % O,E,C,S
7410	MOC Overhead	Man months of instruction	Cost Centers 7430 thru 7486 % S
7430	AFUN (P) course	Students graduated	Final product
7440	AMFU (A) course	Students graduated	Final product
7450	AVCC (C) course	Students graduated	Final product
7461	AD Overhead	Man months of instruction	Cost Centers 7462 thru 4767 % S
7462	ADR (A) course	Students graduated	Final product
7463	ADJ (A) course	Students graduated	Final product

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS MEMPHIS

(SHEET 6 of 8)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
7464	ADR(B) course	Students graduated	Final product
7465	ADJ(A) course	Students graduated	Final product
7466	ADR(B) course	Students graduated	Final product
7467	BASHEL(C) course	Students graduated	Final product
7471	AM Overhead	Man months of instruction	Cost Centers 7472 thru 7477 % S
7472	AME(A) course	Students graduated	Final product
7473	AMS(A) course	Students graduated	Final product
7474	AMH(S) course	Students graduated	Final product
7475	AME(B) course	Students graduated	Final product
7476	AMS(B) course	Students graduated	Final product
7477	AMH(B) course	Students graduated	Final product
7481	AK Overhead	Man months of instruction	Cost Centers 7482 thru 7486 % S
7482	AK(A) course	Students graduated	Final product
7483	AZ(A) course	Students graduated	Final product
7484	MARAK(C) course	Students graduated	Final product
7485	MARAOC(C) course	Students graduated	Final product
7486	DAC(C) course	Students graduated	Final product
7510	Avionics Overhead	Man months of instruction	Cost Centers 7520 thru 7640 % S
7520	AFU(A) course	Students graduated	Final product
7530	AQ(A) course	Students graduated	Final product
7542	AT(A) course	Students graduated	Final product
7543	AW(A) course	Students graduated	Final product
7552	AV(B) course	Students graduated	Final product
7553	AVI(B) course	Students graduated	Final product
7561	TD Overhead	Man months of instruction	Cost Centers 7562 thru 7640 % S
7562	TD(A) course	Students graduated	Final product
7563	TD(B) course	Students graduated	Final product

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS MEMPHIS

(SHEET 7 of 8)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
7620	AVO(O) course	Students graduated	Final product
7630	MAINT(O) course	Students graduated	Final product
7640	MAC(O) course	Students graduated	Final product
5511	Command & Staff	Number of personnel assigned	To cost centers at MANTRAGRU % O,E,C,S
5512	Administrative Department	Number of personnel assigned	To cost centers at MANTRAGRU % O,E,C,S
5513	Training Department	Number of students graduating	To NAMTRADETS % S
5515	Training Maintenance Department	Man months of instruction	To NAMTRADETS % S
5601	NAMTRADETS, Dam Neck, Va.	Man months of instruction	To Cost Center 5000
5622	NAMTRADETS, Quonset Pt., R.I.	Man months of instruction	To Cost Center 5000
5623	NAMTRADETS, Lakehurst, N.J.	Man months of instruction	To Cost Center 5000
5624	NAMTRADETS, Patuxent River, Md.	Man months of instruction	To Cost Center 5000
5625	NAMTRADETS, Oceana, Va.	Man months of instruction	to Cost Center 5000
5626	NAMTRADETS, Norfolk, Va.	Man months of instruction	To Cost Center 5000
5627	NAMTRADETS, Cherry Pt., N.C.	Man months of instruction	To Cost center 5000
5628	NAMTRADETS, Cecil Field, Fla.	Man months of instruction	To Cost Center 5000
5630	NAMTRADETS, Jacksonville, Fla.	Man months of instruction	To Cost Center 5000
5631	NAMTRADETS, Key West, Fla.	Man months of instruction	To Cost Center 5000
5632	NAMTRADETS, Pensacola, Fla.	Man months of instruction	To Cost Center 5000
5633	NAMTRADETS, Meridian, Miss.	Man months of instruction	To Cost Center 5000

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS MEMPHIS

(SHEET 8 of 8)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
5634	NAMTRADETS, Chase Field, Tex.	Man months of instruction	To Cost Center 5000
5635	NAMTRADETS, Kingsville, Tex.	Man months of instruction	To Cost Center 5000
5636	NAMTRADETS, Whidbey Isl., Wash.	Man months of instruction	To Cost Center 5000
5637	NAMTRADETS, Moffett Fld., Cal.	Man months of instruction	To Cost Center 5000
5638	NAMTRADETS, Lamoore, Cal.	Man months of instruction	To Cost Center 5000
5640	NAMTRADETS, El Toro, Cal.	Man months of instruction	To Cost Center 5000
5641	NAMTRADETS, Miramar, Cal.	Man months of instruction	To Cost Center 5000
5642	NAMTRADETS, N. Isl., Cal.	Man months of instruction	To Cost Center 5000
5643	NAMTRADETS, Imp. Beach, Cal.	Man months of instruction	To Cost Center 5000
5645	NAMTRADETS, Alameda, Cal.	Man months of instruction	To Cost Center 5000
5646	NAMTRADETS, Albany, Ga.	Man months of instruction	To Cost Center 5000
5000	Dummy cost center	Total number of S trained in NAMTRAGRU	Final product

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS GLYNCO

(SHEET 1 of 5)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
1A	COMMAND		
1A10	Command and Executive Offices	Average number of personnel at NAS	All cost centers at NAS % O,E,C
1A30	Publi ..formation Offic.	Number of actions completed	All cost centers at NAS % O,E,C
1A40	Legal Office	Number of legal cases	All cost centers at NAS % O,E
1C	COMPTROLLER		
1C10	Administration	Average number of personnel in 1C	Internally consumed in 1C
1C40	Accounting	Number of documents processed	All cost centers at base % O,E,C,S
1C50	Payroll	Number of civilians on payroll	All cost centers at base % C
1C70	Disbursing	Number of transactions	All cost centers at base % O,E,S
1D	CIVILIAN MANPOWER MANAGEMENT		
1D10	Administration	Number of civilians on base	All cost centers at base % C
1D30	Wage and Classification	Number of classifications completed	All cost centers at base % C
1D60	Training	Number of students enrolled	All cost centers at base % C
1E	MILITARY PERSONNEL		
1E10	Administration	Number of military personnel	All cost centers at NAS % O,E
1E20	Officer Personnel Records	Number of officers' records	All cost centers at NAS % O
1E30	Enlisted Personnel Records	Number of enlisted personnel records	All cost centers at NAS % E

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS GLYNCO

(SHEET 2 of 5)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
1H	DATA PROCESSING		
1H10	Administration	Number of personnel	Internally consumed in 1H
1H30	ADP Operations	Equipment operating hours	All cost centers at base % O,E,C,S
1H40	Key-Punch Operations	Number of cards	All cost centers at base % O,E,C,S
21	STORAGE AND WAREHOUSING OPERATIONS		
2110	Receipt	Measurement ton	All cost centers at base % O,E,C
2121	Packing	Unit packs	All cost centers at base % O,E,C
2122	Bulk Issue	Measurement ton and line item	All cost centers at base % O,E,C
2123	Bin Issue	Line item	All cost centers at base % O,E,C
2124	Shipping	Measurement ton	All cost centers at base % O,E,C
2131	Care of Material in Storage	Measurement ton	All cost centers at base % O,E,C
2132	Rewarehousing	Measurement ton	All cost centers at base % O,E,C
2136	Physical Inventory	Line items	All cost centers at base % O,E,C
2141	Bulk Fuel and Lubricating Oil	Barrels	All cost centers at base % O,S
2145	Material Screening and Identification	Line item	All cost centers at base % O,E,C
22	STOCK CONTROL		
2210	Requisition Processing	Line items	All cost centers at base % O,E,C
2220	Other Stock Control Operations	Line items	All cost centers at base % O,E,C

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS GLYNCO

(SHEET 3 of 5)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
23	TRAFFIC MANAGEMENT		
2310	Freight Management	Line items	Throughput (not in process analysis)
2330	Household Goods	Applications	All cost centers in base at O,E,S
27	PROCUREMENT OPERATIONS		
2725	Contract Execution	Procurement line items processed	Throughput (not in process analysis)
AA	AIRCRAFT MAINTENANCE DEPARTMENT		
AA10	Administration	Number of personnel	Internally consumed at AA
AA20	Quality Control	Number of inspections	Internally consumed at AA
AA30	Material Control	Number of line items	Internally consumed at AA
AA40	Power Plant (Engines)	Work orders completed	All cost centers at base % O (with 1310 designator)
AA50	Airframes	Work orders completed	All cost centers at base % O (with 1310 designator)
AA60	Avionics	Work orders completed	All cost centers at base % O (with 1310 designator)
AA80	Aviators Equipment	Work orders completed	All cost centers at base % O (with 1310 designator)
AA90	Support Equipment	Work orders completed	All cost centers at base % O (with 1310 designator)
4C	MEDICAL AND SURGICAL SERVICES		
4C00	Medical	Number of patients	All cost centers on base % O,E,S
4D	DENTAL SERVICES		
4D00	Dental	Number of visits	All cost centers at base % O,E,S

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS GLYNCO

(SHEET 4 of 5)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
9934	Chief Petty Officers' Mess (Open)	Eligible personnel	All cost centers % E
9937	Special Services	Military population served	All cost centers % O,E,S
9943	Retail Clothing Store	Volume of sales	All cost centers % O,E,S
2000	Command & Executive Office	Average number of personnel at NATTC	All cost centers at NATTC % O,E,C,S
2119	Administration Department	Number of personnel assigned	All cost centers at NATTC % O,E,C,S
2120	Personnel Department	Number of personnel assigned	All cost centers at NATTC % O,E,S
2209	Training Administration	Number of students graduated at NATTC	All cost centers at NATTC % S
2320	CIC "O"	Students graduated	Final product
2331	NTDS Course	Students graduated	Final product
2410	AEW Course	Students graduated	Final product
2420	AELW Course	Students graduated	Final product
2430	RIO Course	Students graduated	Final product
2440	ATDS Course	Students graduated	Final product
2450	BJN Course	Students graduated	Final product
2510	AIC Course	Students graduated	Final product
2520	ASAC Course	Students graduated	Final product
2610	ATC Overhead	Man months of instruction	Cost Centers 2630,40,50, 60,70 % S
2630	AC(A) Course	Students graduated	Final product
2640	AC(B) Course	Students graduated	Final product
2650	ATC(O) Course	Students graduated	Final product
2660	GCA(O) Course	Students graduated	Final product
2670	CATCC Course	Students graduated	Final product
2700	ATC Maintenance Overhead	Man months of instruction	Cost Centers 2710,30,40, 50,60,80,90 % S
2710	CPN-4 Maintenance Course	Students graduated	Final product
2730	FPN-36 Course	Students graduated	Final product

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NAS GLYNCO

(SHEET 5 of 5)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
2740	GCA Eng Course	Students graduated	Final product
2750	GCA/RATCC	Students graduated	Final product
2760	SPN 6/12 Course (inc. SPN 35,42)	Students graduated	Final product
2780	SPN 10 Course	Students graduated	Final product
2790	MATCV Course	Students graduated	Final product
2810	Digital Systems	Not available	All cost centers at NATTC % O,E,C,S

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NATTC JACKSONVILLE

(SHEET 1 of 1)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
3000	Command & Executive Office	Average number of personnel at NATTC	All cost centers at NATTC % O,E,C,S
3110	Administration Department	Number of personnel assigned	All cost centers at NATTC % O,E,C,S
3120	Personnel Department	Number of personnel assigned	All cost centers at NATTC % O,E,S
3130	Logistics and Resources Dept. (Admin. Work Units)	Number of personnel served	All cost centers at NATTC % O,E,C
3140	Dental Department	Number of visits	All cost centers at NATTC % O,E,S
3150	Medical Department	Number of visits	All cost centers at NATTC % O,E,S
3200	Training Administration	Man months of instruction	Cost centers at NATTC % S
3300	AE Schools Administration	Man months of instruction	Cost Centers 3320,30, 40,50 % S
3320	AE(A) Course	Students graduated	Final product
3330	AE(B) Overhead	Man months of instruction	Cost Centers 3340, 3350 % S
3340	AEV(B) Course	Students graduated	Final product
3350	AEI(B) Course	Students graduated	Final product
3400	AO Schools Administration	Man months of instruction	Cost Centers 3420,40, 60 % S
3420	AO(A) Course	Students graduated	Final product
3440	AO(B) Course	Students graduated	Final product
3460	AO(M) (O) Course	Students graduated	Final product
3510	Radiog (C) Course	Students graduated	Final product
3530	Marmech Course	Students graduated	Final product
3600	Custodial Services	Not available	Cost centers at NATTC % O,E,C,S

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NATTC LAKEHURST

(SHEET 1 of 1)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
0100	Command & Executive Office	Average number of personnel at NATTC	All cost centers at NATTC % O,E,C,S
0210	Administration Department	Number of personnel assigned	All cost centers at NATTC % O,E,C,S
0220	Personnel Department	Number of personnel assigned	All cost centers at NATTC % O,E,C,S
0240	First Lieutenant	Not available	All cost centers at NATTC % E,S
0400	Supt. of Training AG Schools	Man months of instruction	Cost Centers 0410, 0420 % S
0410	AG(A) School	Students graduated	Final product
0420	AG(B) School	Students graduated	Final product
0500	Supt. of Training PR Schools	Man months of instruction	Cost centers 0510, 0520 % S
0510	PR(A) School	Students graduated	Final product
0520	PR(B) School	Students graduated	Final product
0600	Supt. of Training AB Schools	Man months of instruction	Cost Centers 0610, 0700 % S
0610	Training AB(A) Schools	Students graduated	Final product
0700	Training AB(C) & (O) Schools	Students graduated	Final product

DISTRIBUTION RULES FOR INTERMEDIATE PRODUCTS AT NATTU PENSACOLA

(SHEET 1 of 1)

RMS CODE	SUBCOST CENTER	WORK UNIT (OUTPUT)	INTERMEDIATE PRODUCT DISTRIBUTION
8000	Command & Executive	Average number of personnel at NATTU	All cost centers at NATTU % O,E,C,S
8100	Administration Department	Number of personnel assigned	All cost centers at NATTU O,E,C,S
8200	Training Department Overhead	Number of students graduating	All cost centers at NATTU % S
8240	PH(A) School	Students graduated	Final product
8270	PH Recon (O)	Students graduated	Final product
8300	MOPIC(C) School	Students graduated	Final product
8320	PHER Course	Students graduated	Final product

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13. ABSTRACT

A Manpower Allocation Model (MAM) and a Productivity Measurement Model (PMM) for the Naval Air Technical Training Command (CNATECHTRA) were developed to provide Navy management with tools for improved meapower planning, programming and budgeting. Development of the models included investigation of the available data and an analysis of the processes which take place at the various CNATECHTRA facilities. After the models were formulated, computer programs were written, tested and run using available data. The MAM provides a quantitative means of examining manpower requirements to support various student training rates at the two naval air stations, four naval air technical training centers, one naval air maintenance training group and one naval air technical training unit comprising CNATECHTRA, as well as its command headquarters staff. The model is designed to use data from RMS PRIME, OPNAV 5320, and Summary of Training Operations Reports. Other sources of data can also be utilized.

Security Classification

KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Personnel Research						
Manpower Allocation Model - MAM						
Productivity Measurement Model - PMM						
Student Training Rate - STR						
Resource Management System - RMS						
Process Analysis						

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